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TRANSACTIONS AND PROCEEDINGS

AND

REPORT

OF THE

ROYAL SOCIETY of SOUTH AUSTRALIA.

VOL. X.

(For 1886-7.)

PRICE, TEN SHILLINGS.

Adelaide:
W. C. RIGBY, 74, KING WILLIAM STREET.

1888.

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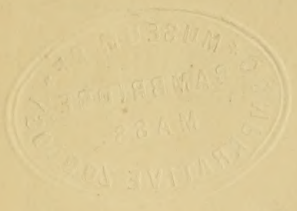

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CONTENTS.

PAGE.

Rev. T. Blackburn: Description of Twenty New Species of South Australian Coleoptera 1

Rev. T. Blackburn: Notes on Australian Coleoptera, with Descriptions of New Species 12

Walter Howchin: Remarks on a Geological Section at the New Graving Dock, Glanville, with special reference to a supposed Old Land Surface now below Sea Level 31

Rev. T. Blackburn: Notes on Australian Coleoptera, with Descriptions of New Species 36

Rev. T. Blackburn: Further Notes on Australian Coleoptera, with Descriptions of New Species 52

Prof. E. H. Rennie: Notes on the Colouring Matter of *Drosera Whittakeri*.. 72

Dr. W. L. Cleland: Caroona Hill (Lake Gilles) 74

Baron F. von Mueller and Prof. R. Tate: Definitions of Two New Australian Plants.. 80

H. Y. L. Brown: Notes on the Geological Features of the Teetulpa Goldfields 82

Thomas Parker: The Underground Waters of South Australia and Suggestions as to Mode of their Utilization 84

Prof. R. Tate: The Gastropods of the Older Tertiary of Australia—Part I. (plates i.-xiii.) 91

Rev. T. Blackburn: Further Notes on Australian Coleoptera, with Descriptions of New Species 177

J. G. O. Tepper: Notes on and Additions to the Flora of Kangaroo Island 288

A. Zietz: The Ophidia of South Australia 293

A. Zietz: Descriptions of New Species of South Australia Crustaceans (plate xiv.).. 298

A. Zietz: Notes on some Rare Varieties of South Australian Snakes.. 300

MISCELLANEA.

EXCERPS: New South Australian Plants from Kangaroo Island.. .. 301
Additions to the Queensland Flora 302
Notes on the Straphylinidæ in the Adelaide Museum .. .. .. *Ibid*
List of Species of Agaricus and Pamis from Lake Bonney 303
Note on *Carcharias hemiodon* as an Australian Species .. .. .. *Ibid*

Abstract of Proceedings 304
Annual Report 309
Balance Sheet 312
Donations to the Library 313
List of Fellows, Members, &c. 319

APPENDIX.

FIELD NATURALISTS' SECTION.. 322
MICROSCOPICAL SECTION 325

Descriptions of Twenty New Species of South Australian Coleoptera.

By Rev. T. Blackburn, B.A.

[Read December 7, 1886.]

For some time past I have been occupied in examining and describing a number of *Staphylinidæ* in my possession (chiefly collected at Port Lincoln), which appear to be new. The issue of the first part of a memoir entitled "A Revision of the *Staphylinidæ* of Australia, by A. Sidney Olliff," has led me to suppress for the present my descriptions of *Aleocharidæ* (to which that part of Mr. Olliff's memoir relates), as some of the species I was intending to describe appear to be identical with species described by that author. The *Staphylinidæ* treated of in the following pages belong, therefore, to the tribes ii.-v. of M. Lacordaire. I take the opportunity of this publication to insert descriptions of two fine species of *Euryscaphus* presented to me about a year since by Professor Tate, of the Adelaide University, which, the Professor informs me, were captured at Ouldea, the larger and finer of which I have taken the liberty of associating with his name.

Euryscaphus Tatei, sp. nov. Niger, nitidus, capite inter oculos foveis duabus profundis arcuatis instructo; prothorace minus lunulato; elytris convexis, minus circularibus, subseriatim punctatis; utrinque in disco puncto valde majore; tibiis anticis externe bidentatis, intermediis dente acuto instructis. Long., 15 lin.; lat., 6½ lin.

The head is smooth (though somewhat *lumpy* in front), broad, and flattish, with the usual two bent sulci, and (close within the eyes) one or two large punctures. The thorax is about half again as wide as long, considerably emarginate in front, its sides not much rounded, its hinder angles quite rounded off, and its base quite strongly lobed; its surface is transversely wrinkled. On either side of the anterior portion, a little within the angle, is a large well-defined shallow impression, and the space between the two impressions along the anterior portion of the thorax is closely set with distinct shallow punctures. A well defined longitudinal channel occupies the disc of the thorax, but is limited in front by the transverse punctured space, and is intersected near its hinder extremity by a strongly impressed transverse depression.

The elytra, taken together, are a little longer than wide, with the turned-up margin rather narrow, except at the

shoulders, where it is broad and prominent; the basal portion is scooped out not very strongly, and the shoulders are well marked. A sparing and very fine puncturation (not noticeable without a lens) is rather evenly distributed over the entire surface of the elytra, in addition to which there is a system of coarse (but not large) shallow punctures distributed, with little order, near the suture and external margin, but forming fairly regular rows on the disc—about 50 punctures in each row. On each elytron a single, large, deep puncture or fovea is placed about one-third of the length of the elytron from the apex, and about a third of the width of the same from the suture.

The fore tibiæ have three small teeth above the two large ones.

In general build this insect must resemble *E. angulatus*, Macl. (which I have not seen), but, *inter alia*, its thorax is totally different. The two large punctures on the elytra distinguish it from all the described species, except *bipunctatus*, Macl., and *obesus*, Macl. From these its narrower form and more strongly lobed thorax, as well as the peculiar puncturation of the elytra readily distinguish it.

Ouldea, S. Australia.

Eurytscaphus subsulcatus, sp. nov. Niger, nitidus, capite inter oculos foveis duabus profundis arcuatis instructo; prothorace basi subtruncato, angulis posticis reflexis; elytris longioribus quam conjunctim latioribus, subsulcatis; tibiis anticis externe bidentatis, intermediis dente parvo acuto instructis. Long., 11 lin.; lat., 4 lin.

The head is of the form and sculpture usual in the genus; there does not, however, seem to be any noticeable puncturation close to the eyes. The thorax is just twice as wide as long, considerably emarginate in front, not much rounded on the sides, but very much so near the posterior angles, which are almost vertical, and somewhat dentiform. The base is subtruncate, being very slightly and widely lobed. The peculiar form of the posterior part of the thorax effects that the base, when viewed directly from above, appears to have its angles almost effaced, and to be gently sinuate, while viewed horizontally from the front the angles appear very sharp, and the base absolutely truncate. The thorax has a strong discal channel not reaching the front, and some obscure puncturation near the anterior margin; otherwise its surface has no noticeable sculpture, but is very inconspicuously and irregularly wrinkled or punctured; its reflexed margin is broad and strong.

The elytra together are just a little longer than wide, strongly convex, moderately rounded on the sides, with the shoulders little prominent, and with the reflexed margin nar-

row. The surface is quite distinctly, though very shallowly, sulcate, with the interstices rather strongly convex, the sulci faintly but not finely punctured.

The fore tibiæ have three small teeth above the two large ones.

This insect must be closely allied to *E. angulatus*, Macl., but is only about two-thirds of its size, and evidently has the elytra very differently sculptured, as they are distinctly sulcate to the naked eye, while in *angulatus* they are said to be "finely striated when examined under a lens."

Ouldea, S. Australia.

TACHYPORIDÆ.

CONURUS.

So many of M. Fauvel's species in this genus are undescribed but merely compared with some other insect, that there is an inevitable danger of creating confusion in describing new species allied to those of the learned French author. I therefore pass by for the present several species in my possession which may be identical with some of his, and describe only the following evidently distinct one:—

C. instabilis, sp. nov. Niger, nitidus, antennarum basi, palpisque testaceis, pedibus piceis, abdominis segmentis postice rufomarginatis, nonnullis exemplis elytris plus minusve rubis; antennis elongatis, robustis, sat incrassatis; prothorace basi latiore quam longiore, antice rotundatim angustato, subtilissime crebrius punctato; elytris prothorace sat longioribus, postice angustatis, æque ac thorax punctatis. Long., 5 mm.

In the male the basal joints of the front tarsi are strongly dilated, the apical ventral segment is strongly incised in a triangular form, and the preceding segment is emarginate in the middle, the emargination being fringed with golden ciliæ. In the female the apical segment terminates dorsally in four laciniæ, the upper (middle) ones rather longer than the external, but the incision between them extending backwards not nearly so far as that between them and the latter.

Port Lincoln district.

MYCETOPORUS.

M. floralis, sp. nov. Nitidus, ferrugineo-rufus, palpis, antennis (basi excepto), pectore, coxis, elytrisque (præter humeros et angulum apicalem externum) piceis, abdominis segmentis plus minusve infuscatis, aureo-pubescentibus; capite prothoraceque lævibus; elytris prothorace sat longioribus, utrinque apice longitudinaliter foveatis, triseriatim punctatis, serie dorsali circiter 10 punctatâ; abdomine sparsim obscure punctato. Long., 6 mm.

Of the hind body segments 1-4 are infuscate except a narrow apical margin, five has only the base infuscate, six and seven are entirely blackish.

This insect will probably have to form a new genus. Unfortunately I have only a single specimen which I am unwilling to subject to the treatment necessary for describing its characters with accuracy; the following, however, is such information as I can supply:—Facies of *Bolitobius*, maxillary palpi as in *Mycetoporus*; antennæ elongate, and thick, reaching to near the middle of the elytra, none of the joints transverse; tarsi five jointed, all longer than their tibiæ (the posterior nearly twice as long), the basal joint of all about equal in length to the following two joints; the discal series of punctures on each elytron ends in a deep fovea, between which and the suture there are faint indications of several more longitudinal foveæ; second segment of hind body not keeled beneath, albeit there is a small somewhat triangular space at the base of that segment only discernible in certain lights which seems faintly elevated above the surface of the segment; prosternum very strongly carinate; intermediate and posterior coxæ not at all elevated above the surface of the meso and meta sterna.

On flowers of Eucalyptus, near Port Lincoln.

STAPHYLINIDÆ.

ACYLOPHORUS.

A. indignus, sp. nov. Niger, antice nitidissimus, antennarum articulo primo ad basin et pedibus fuscis, abdomine et elytris opacis fusco pubescentibus, illo minus iridescente segmentorum marginibus apicalibus dilutioribus; capite subovato, antice gradatim (basi ipsâ fortiter subito) angustato, inter oculos (et basin prope) binis puncturis magnis, post oculos subtiliter crebre punctato; prothorace antice fortiter angustato, punctis 2 disco fere medio, singulo prope angulos anticos notato; elytris crebre fortius, abdomine fortius minus crebre, punctatis, illis prothorace vix longioribus. Long., 5½ mm.

This species appears to resemble *A. asperatus*, Fauv., but is entirely different in colour, with a different puncturation of the head and thorax, and, if I am right in understanding M. Fauvel to say that the elytra of his species are a third longer than together wide, with much shorter elytra. The contrast between the brightly shining head and thorax of *A. indignus*, and its opaque elytra and hind body is very noticeable.

Near Adelaide, banks of the Torrens, presented by Mr. R. H. Pulleine.

HETEROTHOPS.

H. taurus, sp. nov. Nitidus, piceus, antennis, palpis, pedi-

busque sordide testaceis, prothorace rufescenti; elytrorum apice obscure flavo, abdominis segmenti 6i. apice anguste albo-marginato; antennis robustis; capite fortiter transverso, prothorace vix angustiori; prothorace, latitudine longitudini æquali, punctis 2 ante medium disco sat approximatis notato; elytris prothorace vix longioribus, subtiliter crebrius punctatis, abdomine crasse sparsim punctato. Maris segm. 6° parum profunde emarginato. Long., 4-5 mm.

This species seems to be rather closely allied to *H. laticeps*, Fauv., but is very differently coloured, has the head smoothly convex between the antennæ, and doubtless differs in other respects, but as M. Fauvel, instead of describing *H. laticeps*. merely compares that species with his *picipennis*, and *picipennis* again with the European *prævius*, Er., it is difficult to gain a correct notion of the relative length of its thorax, elytra, &c. I should judge, however, that the hind body of *H. laticeps* is considerably more closely and finely punctured than that of the insect I have just described.

In one of my specimens (perhaps immature), the whole elytra are suffused with testaceous, so that the yellow apical border is less conspicuous than in darker examples.

In shape this species resembles *Quedius auricomus*, Kies., though the eyes are much smaller and the antennæ longer and more robust than in that insect.

Under bark of *Eucalyptus*, about 30 miles north of Port Lincoln.

QUEDIUS.

Q. inconspicuus, sp. nov. Niger, nitidus, antennis piceis apicem versus ferrugineis, palpis pedibusque piceis, tarsis rufis, prothorace rufo-piceo, elytris viridescentibus, abdominis segmentis 6° (ad apicem) et 7° obscure cupreis; antennarum articulo 3° 4° sat longiore, articulis 4-10 subæqualibus vix elongatis; capite suborbiculato, utrinque punctis 3 (2 in margine ipso oculi), 2 aliis utrinque basi, aliis post oculos subtilibus, notato; prothorace capite sat latiore, fortiter transverso, tertiâ parte disci anticâ punctis 2 approximatis notato, angulis anticis obtusis, posticis rotundatis; elytris prothorace vix longioribus, his cum scutello fortius sat sparsim punctatis; abdominis segmentis basalibus fortiter nec crebre, segmento 6° fortiter crebrius, segmento 7° fortiter sparsim punctatis. Long. 8 mm.

Apparently not unlike *Q. luridus*, Fauv., but differing in colour and in having longer antennæ (in which none of the joints are transverse), more faintly punctured elytra, &c., &c.

Wallaroo.

Q. Andersoni, sp. nov. Niger, nitidus; antennis piceis, apice rufescentibus; prothorace et coxis anterioribus læte rufis; elytris ferrugineo-rufis; pedibus piceis, genubus tarsisque ferrugineis; antennarum articulis 4-10 paulo longioribus quam latioribus; capite suborbiculato, ut *Q. inconspicui* notato; prothorace capite multo latiore, sat transverso, tertiâ parte disci anticâ punctis 2 sat approximatis, extus utrinque punctis 2 marginalibus, notato, angulis anticis obtusis, posticis rotundatis; elytris prothorace vix longioribus, his cum scutello fortius nec crebre punctatis; abdomine longe nigro-piloso, sparsim fortiter punctato. Long., 5-6 mm.

Somewhat near *Q. ruficollis*, Grav., but smaller and differently coloured, the elytra being bright rusty-red, and the hind body unicolorous; also the head is much smaller, the elytra are more closely punctured, &c.

Taken in the Port Lincoln district by Mr. J. Anderson, to whom I am indebted for the knowledge of this insect.

Q. Tepperi, sp. nov. Nitidus, niger, genubus tarsorumque apice rufis, elytris æneis; antennis elongatis, articulo 2° 3° paulo breviore, 4-10 etiam brevioribus nec transversis; capite fortiter transverso, antice (? maris soli) fortiter depresso, ut *Q. inconspicui* notato; prothorace capite latiori, antice angustato, tertiâ parte disci anticâ punctis 2 sat approximatis, et quibusdam aliis majoribus in marginibus lateralibus, notato; elytris prothorace evidenter longioribus, fortius crebre punctatis; abdomine fortius minus crebre punctato. Long., 5½ mm.

This species is probably allied to *Q. luridus*, Fauv. (which I have not seen), but is smaller, with the head and thorax deep black. The depression on the front of the head seems to be distinctive, and the antennæ are evidently more slender than in *luridus*. The punctuation is finer and closer than in *ruficollis*, Grav., but stronger and less close than in *iridiventris*, Fauv. Compared with *inconspicuus*, mihi, *Tepperi*, is much smaller, with the elytra more closely punctured, &c.

There is a single specimen of this insect in the Adelaide Public Museum. It was taken by Mr. Tepper on Mount Lofty.

OXYPORUS.

O. rufus, Linn. Of this European insect (not hitherto recorded as Australian, so far as I know) there is a specimen among the Australian *Staphylinidæ* in the Adelaide Public Museum. It has no ticket or note of locality attached to it.

HESPERUS.

H. Pulleinei, sp. nov. Niger, nitidus, parce nigro-pubescens, clypeo, palpis, antennis et abdominis segmentis ultimis 2 læte testaceis (his aureo-pubescentibus), elytris violaceo-cæruleis; capite fortiter transversim quadrato, crasse punc-tato, disco lævi; prothorace vix transverso, antice truncato, crasse punctato, disco longitudinaliter lævi; elytris prothorace vix longioribus, subtilius squamose nec crebre punctatis; abdomine subtilius nec crebre punctato. Long., 12 mm.

A single female of this beautiful species was taken by Mr. R. H. Pulleine at Burnside, near Adelaide, *in stercore bovis*.

LEPTACINUS.

L. linearis, Grav. I cannot discover that this species has been previously recorded as occurring in Australia. I possess, however, a single specimen taken at Port Lincoln which I cannot distinguish from European examples.

L. Picticornis, sp. nov. Robustus, nitidus, niger, antennarum articulo primo apice, secundoque toto testaceis, articulis 4-11 fusco-rufis, palpis mandibulis tarsisque rufescenti-bus; capite elongato-quadrato, utrinque sparsim fortiter punctato; prothorace vix elongato, seriebus dorsalibus 6-7 punctatis; elytris prothorace vix longioribus, confuse-lineatim punctatis; abdominis lateribus punctatis, disco lævi. Long., 6-7 mm.

The antennæ are short, joints 4-10 strongly transverse; the forehead has only two longitudinal furrows (which are strongly punctate), the external ones of the usual 4 being obsolete. In most specimens the knees, and in some the tibiæ, are pitchy red. In some specimens also the elytra and apex of the hind body are of a dull reddish tint.

I have found this species plentifully in the Port Lincoln district and also near Adelaide. Notwithstanding its abundance, however, I cannot ascertain it to have been described. The absence of the lateral furrows of the forehead and the peculiar colouring of the antennæ distinguish it strongly.

L. filum, sp. nov. Angustus; parallelus; nitidus; niger; antennis, palpis, pedibusque piceis; elytris nonnullis exemplis apicem versus dilutioribus; antennarum articulis 4-10 sat fortiter transversis; capite elongato, crebre subtilius punctato, fronte longitudinaliter obsolete bifoveolato; prothorace tertiâ parte longiore quam latiore, subtiliter crebrius vix lineatim punctato, disco lævi; elytris protho-race vix longioribus, crebrius subtiliter confuse punctatis; abdomine subtilissime nec crebre punctato. Long., 5-5½ mm.

The slightness of the impression of the frontal foveæ, and the confusion of the dorsal series of thoracic punctures with the lateral punctures are unusual in this genus, but I can discover no other character to separate this insect from typical *Leptacinus* of which it has perfectly the facies.

Taken rarely near Port Lincoln.

PÆDERIDÆ.

LATHROBIUM.

L. Adelaidæ, sp. nov. Parallelus, parcius pubescens, sat nitidus, ferrugineus, abdominis segmentis 1-5 apice infuscatis; antennis sat gracilibus, elongatis, articulis 2, 4, 5, 6 subæqualibus; oculis parvis; capite quadrato fortiter nec crebre punctato; prothorace vix elongato, disco utrinque punctorum serie sulculo impressâ externe spatio lævi secutâ notato, lateribus confuse subtiliter punctatis; elytris prothorace sat longioribus subtiliter lineato-punctatis; abdomine vix distincte punctato. Long., 5-5½mm.

The generic position of this insect is perhaps a little doubtful, as the first joint of the hind tarsi is decidedly (though only very slightly) longer than the second. In respect of its dilated front tarsi and other characters it agrees very well with *Lathrobium*. Two specimens (both female) have occurred near Adelaide.

SCIMBALIUM.

S. agreste, sp. nov. Minus depressum; piceo-nigrum; antennis, palpis, pedibus et suturâ rufescentibus; antennis elongatis, ad basin elytrorum attingentibus; prothorace capiteque nitidis, hoc longiore quam latiore, subparallelo, inter antennarum basin depresso, antice sparsim fortiter postice densius subtilius duplo punctato; illo longiore quam latiore, antice parum angustato, sat dense duplo punctato (subtiliter et multo subtilius), lineâ longitudinali angustâ lævi; elytris minus nitidis, thorace quintâ parte longioribus et latioribus, dense nec fortiter punctatis, suturâ elevatâ; abdomine parum nitido, crebre subtilissime punctato. Maris segmento 6° subtus medio arcuatim emarginato, utrinque minus fortiter emarginato, incisuris lateralibus dense nigro-ciliatis, 7° profunde inciso. Long., 11-12 mm.

This species is evidently near *S. duplopunctatum*, Fauv., from which it differs *inter alia* in having its elytra proportionately longer (the suture being quite red and rather strongly elevated), and in the sexual characters (the male having the apex of the sixth ventral segment quite strongly emarginate in the middle, while there is also a shallow emargination on either side fur-

nished with black ciliæ). I do not observe any iridescence on this insect.

Port Lincoln; also near Adelaide.

S. lætum, sp. nov. Subdepressum, nigrum, antennis, mandibulis, palpis, pedibus, et abdominis segmentorum marginibus apicalibus plus minusve fuscescentibus; elytris (præter basin) læte rufis; capite longiore quam latiore, subtiliter nec crebre punctato, punctis majoribus crebrius interspersis, disco haud lævi, lateribus rotundatis; prothorace capitis latitudine, tertiâ parte longiore quam latiore, sparsim duplopunctato, disco longitudinaliter lævi; elytris prothorace sat latioribus vix longioribus, crebre rugose nec fortiter punctatis; abdomine sat crebre punctato. Maris segmento 6° subtus medio et a lateribus leviter emarginato, incisuris lateralibus nigro-ciliatis, 7° late sat fortiter inciso.

Henley Beach and Woodville, under stones, also flying to light.

CRYPTOBIUM.

C. delicatulum, sp. nov. Angustulum; nitidum; colore variabile; nigrum, antennis palpis pedibusque testaceis, nonnullis exemplis thorace elytrisque piceis vel rufescentibus, nonnullis antennis tibiisque plus minusve infuscatis; capite elongato, depresso, fortiter nec crebre punctato, disco lævi: prothorace fere duplo longiore quam latiore, postice angustato, subtiliter crebrius punctato, lineâ mediâ lævi; elytris prothorace vix longioribus subtiliter (nonnullis exemplis obsolete) nec crebre punctatis; abdomine obsolete punctato, segmentis 6-7 apice piceolis: Maris segmento 6° subtus profunde triangulariter inciso. Long., 4-5½ mm.

Somewhat allied to *C. fractum*, Fauv., but smaller, narrower, and differently coloured. The thorax is much more narrowed backwards, and the elytra much more faintly punctured, indeed in some specimens they are almost devoid of defined puncturation.

Not rare in marshy places near Port Lincoln; also taken near Adelaide.

SUNIUS.

S. æqualis, sp. nov. Angustus, ferrugineus; antennis, palpis, pedibus et elytrorum apice, pallide testaceis, abdominis segmento 6° præter apicem nigro; antennis gracilibus, elongatis; capite elongato subquadrato dense subtiliter æque ac thorax punctato; prothorace capite sat angustiori, a parte latissimâ (paulo post marginem anticum positâ) antice fortiter, postice leviter vix rotundatim, angustato; elytris prothorace sat latioribus longioribusque, fortius

minus crebre punctatis; abdomine sparsim squamose punctato. Long., $4\frac{3}{4}$-$5\frac{1}{4}$ mm.

This species closely resembles in build the European *S. angustatus*, Er., compared with which it has longer antennæ, and the elytra and hind body differently punctured. The colour—entirely ferruginous and testaceous, except the black basal part of the penultimate segment—distinguishes it widely from all the Australian species previously described.

Not rare near Port Lincoln; also taken by Mr. Tepper in the Mount Lofty range.

PÆDERUS.

P. Adelaidæ, sp. nov. Rufus, capite (mandibulis exceptis) nigro, elytris cyaneis; antennis elongatis gracilibus; capite prothoraceque sparsim fortiter punctatis, hoc subgloboso; elytris angustis, prothorace vix longioribus, crebre fortiter grosse punctatis, abdomine sparsim fortiter punctato. Long., 10 mm.

This is a very distinct species, owing to the uniformity of colouring—the head and elytra excepted. Two specimens were taken by Mr. Pulleine in *débris* of the River Torrens, near Adelaide. In one of these the knees, and in the other the knees and tibiæ, are slightly infuscate.

PINOPHILIDÆ.

ŒDICHIRUS.

Œ. Andersoni, sp. nov. Ferrugineus; griseo-pubescens; palpis, antennis, pedibusque testaceis, nonnullis exemplis abdomine nigricante; capite leviter transverso, rotundato, sparsim grosse punctato; prothorace ovato, capite vix latiore, postice sat angustato, grosse confuse punctato, in longitudinem (præsertim prope basin) carinato; elytris prothorace tertiâ parte brevioribus, grosse punctatis; abdomine (præter segmentorum marginem apicalem) profunde nec crebre punctato. Long., 8-9 mm.

A very distinct species. Occurs near Port Lincoln, under stones.

PINOPHILUS.

P. latebricola, sp. nov. Convexus; niger; fusco-pubescens; antennis, palpis, pedibusque rufo-testaceis; capite transverso, antice parce (postice densius) subtiliter punctato, disco lævi; prothorace vix longiore quam latiore, antice subtruncato, capite vix latiore, postice rotundatim angustato, basi haud carinulato, dense subtiliter punctato, angulis anticis subrectis, posticis rotundatis; elytris prothorace sat longioribus, dense subtiliter punctatis, abdomine densissime subtiliter punctato. Maris segmento 7° apice subtus triangulariter inciso. Long., 10-11 mm.

Not very closely allied to any described species. Compared with *P. rufitarsis*, Fauv., this insect is more convex, with the thorax more truncate in front, the sides more rounded and less narrowed backwards, the elytra considerably longer (about one-fifth longer than the thorax), and the puncturation throughout much closer and finer.

Not uncommon under stones near Henley Beach.

Notes on Australian Coleoptera, with Descriptions of New Species.

By the Rev. T. Blackburn, B.A.

[Read April 5, 1887.]

The Hon. W. Macleay, of Sydney, has recently published through the Linnean Society of New South Wales two papers of very great interest, each of them being a monographic revision of a genus of *Lamellicornes* peculiar (so far as is known) to Australia, viz., *Diphucephala* and *Liparetrus*. In 1866 Mr. Macleay, through the Entomological Society of New South Wales, dealt similarly with the genus *Phyllotocus* and its allies, and in 1871, through the same Society, he supplied descriptions of several new species from Queensland of the last-named genus. I venture to draw the special attention of the Royal Society to the exceedingly valuable work that Mr. Macleay has commenced in the series of memoirs alluded to above, entitled "Miscellanea Entomologica," and which is all the more valuable because in all probability he is the only entomologist qualified for the task, so that without his doing it it would long remain undone. By far the richest Australian collections both of specimens and books are at his disposal, and by publishing the results of his studies of these he will open the way for less-favoured students to supplement his work by the publication of such of their observations as his memoirs enable them to ascertain to be still unrecorded.

In the present paper I offer to the Royal Society descriptions of several new species belonging to *genera* that Mr. Macleay has dealt with, and add a few notes on certain species that he has treated of. I take the opportunity also to furnish descriptions of a few new *Coleoptera* belonging to other groups that have recently come under my notice.

SCARITIDÆ.

Eurygnathus, *gen. nov.*

Corpus maxime elongatum; palpi maxillares et labiales apice fortiter securiformes; caput rotundatum; mandibulæ crassæ capite breviores, fortiter arcuatæ, intus unidentatæ; sulci frontales sat fortiter impressi, elongati, postice divergentes; tibiæ anticæ externe bidentatæ; intermediæ unispinosæ.

The remarkable insect on which this genus is founded must be somewhat allied to *Teratidium macros*, Bates, one of the rarest and most interesting of Australian *Carabidæ*. It differs from it, however, in certain respects that render the two incapable of being associated in the same genus. The general form of this insect—the rounded head, the extremely incrassated apex of all the palpi, the bisinuate labrum prominent in the middle, the prominent eyes encased behind in broad orbits, and the projecting tooth at the shoulders of the elytra—are strongly suggestive of *Teratidium*, but the bidentate anterior tibiæ, the head scarcely so wide as the thorax, the well-marked frontal foveæ, and the strong external apical spine of the intermediate tibiæ, are inconsistent with its finding a place in Mr. Bates' genus.

E. fortis, sp. nov. Niger; nitidus; capite (mandibulis inclusis) fortiter transverso; antennis prothorace vix longioribus; prothorace leviter transverso canaliculato, antice subtruncato (angulis anticis minus notatis), lateribus in parte anteriore plus quam dimidiâ leviter emarginatis, inde fortiter angustatis, basi leviter rotundatâ, angulis posticis vix perspicuis, basi apice multo angustiori; elytris prothorace vix angustioribus, subcylindricis, fortiter punctato-striatis, striis punctatis apicem marginesque versus obsoletis, humeris externe dentatis; pedibus validis; tibiis anticis apice abrupte palmatis, externe fortiter bidentatis; tibiis intermediis et posticis apice intus fortiter bispinosis. Long., 40 m.; lat., 11 mm.

I may add that the elytra are slightly narrowed at the base, and rather deeply emarginate across their front, that there is a row of somewhat elongate impressions in a deep furrow just before the reflexed margin of the elytra, the portion of the elytra on which it is placed being vertical, and that the frontal foveæ are very strong behind, commencing in a fovea nearly as far back as the hinder edge of the eye, thence converge strongly to about the level of the front of the eye, whence they diverge again, but become exceedingly faint, and that they are united at their hinder end by a shallow furrow.

A single specimen of this magnificent insect was taken by Mr. Tepper at Ardrossan, and is in the South Australian Museum.

STAPHYLINIDÆ.

BLEDIUS.

B. caroli, sp. nov. Niger; minus nitidus; breviter albido-pubescens; ore, antennis, palpis, pedibusque testaceis; elytris pallide testaceis, basi et maculâ communi nigris;

ano rufescente; capite, prothorace elytris et abdominis segmentis (basi exceptâ) creberrime subtiliter punctatis; prothorace subtilissime canaliculato, antice truncato, postice sat angustato, elytris sat breviore, lateribus fortiter rotundatis. Long., 3-3½ mm.

The black mark common to the elytra proceeds from the scutellum down the suture, becoming wider to about the middle of the elytra, where it expands abruptly on each side till it reaches nearly half way across each elytron, and does not extend into the apical quarter of the elytra. It has somewhat the shape of the club in a pack of cards.

I have named this species after my son, who obtained a short series by washing sand on the banks of the Port River, near Adelaide.

B. minax, sp. nov. Niger; nitidulus; parce pilosus prothoracis cornu, elytris, pedibus, anoque piceis vel rufescentibus; antennis elongatis minus clavatis; capite creberrime subtiliter punctato, inter spinam utrinque elongatam acutam longe ciliatam fortiter incurvam, et verticem, transversim late depresso; prothorace convexo, subquadrato, parce nigro-piloso, parce profunde punctato, angulis anticis subrotundatis, lateribus medio intus emarginatis postice fortiter coarctatis, angulis posticis minus perspicuis, sulco sat profundo antice spinâ gracili acutâ a basi ad apicem incurvâ producto; elytris convexis, prothorace vix latioribus, haud longioribus, dense crasse punctatis; abdomine alutaceo, segmentis apicem versus obscure crasse punctatis. Long., 5 mm.

Allied to *B. hamifer*, Fauv., from which it differs *inter alia* in its more parallel form, longer and more slender antennæ, frontal horns strongly bent inwards, and very coarsely punctured thorax.

A single specimen occurred to me on the bank of a creek about 35 miles north-west of Port Lincoln.

B. injucundus, sp. nov. Piceo-niger; minus nitidus; antennis, tibiis, tarsisque rufescentibus; antennis sat brevibus, apicem versus incrassatis, articulis subapicalibus sat fortiter transversis; capite alutaceo vix evidenter punctato; prothorace leviter canaliculato subtilius sat crebre, elytris fortius sat crebre, abdomine sparsim subtiliter, punctatis. Long., 3¼ mm.

This is an inconspicuous species, but it does not appear to bear much resemblance to any yet described as Australian.

I have a single specimen from Port Lincoln, but I do not know the circumstances of its capture.

LAMELLICORNES.

PHYLLOTOCUS.

P. occidentalis, sp. nov. P. assimili affinis; latius, pallide testaceus, nitidus, elytrorum apice (vix) abdomineque fuscis; prothoracis angulis posticis rotundatis; elytris leviter punctato-striatis; tibiis anticis (? maris solum) externe bidentatis. Long., 8½-9 mm.

Rather closely allied to *P. Macleayi*, Fisch., and *P. assimilis*, Macl., but a broader and shorter insect than either, with the hind angles of the thorax rounded off, the sculpture of the elytra fainter, and their apex almost devoid of fuscous shading. My specimens all appear to be males. The anterior tibiæ are bidentate externally, and the claws of the anterior tarsi are only very moderately thickened, with very little, if any, difference *inter se*.

Several specimens of this insect were sent to me from Western Australia by E. Meyrick, Esq., B.A.

P. Meyricki, sp. nov. Minus convexus, niger, obscure iridescens, sparsim albo-hirtus; antennis (clavâ exceptâ), pedibusque (tarsis piceis exceptis) squalide testaceis; elytris (suturâ marginibusque exceptis) pallide testaceis; capite prothoraceque sparsim subtilius punctatis, elytris leviter punctato-striatis; tibiis anticis (? maris solum) externe bidentatis; tarsorum anticorum unguiculis (? maris solum) modice dilatatis, subæqualibus. Long., 6½-7 mm.

Var.—Rufus; capite, palpis, et maculis in prothorace nonnullis, nigris; elytris albidis piceo-marginatis.

The iridescence of this species is not very conspicuous (in the pale variety it is scarcely discernible); the suture of the elytra is blackened only very narrowly; the marginal blackening or infuscation of the same is scarcely traceable along the base, at the base of the external margin is scarcely as wide as an interstice between the elytral striæ, widens towards the apex till it is about three times as wide as at the base, and then becomes merged in an apical cloud of the same colour, which occupies nearly a quarter the length of the elytra. The whitish hairs with which the insect is furnished are chiefly on the underside, and fringing the margins. I am not quite sure of the sex of my two specimens; but from the bidentation of the anterior tibiæ and the decided (though equal and not very strong) dilation of the anterior claws I expect they are males. The basal joint of the posterior tarsi is shorter than the second.

Perhaps somewhat allied to *P. iridescens*, Macl. (a species that I am not sure I know). Judging by Mr. Macleay's brief description (dealing only with size, colour, and pubescence),

Meyricki is smaller than *iridescens*, much less conspicuously iridescent, and has the thorax quite differently coloured. *Palliatus*, Macl. (which its author conjectures may be female *iridescens)* has the elytra sulcate.

This also was sent to me from Western Australia by E. Meyrick, Esq.

MÆCHIDIUS.

M. major, sp. nov. Brunneo-piceus, subnitidus, depressiusculus; clypea triangulariter exciso, lateribus obliquis, bisinuatis; capite prothoraceque crasse punctatis dense hispidis; hoc postice minus angustato, lateribus crenulatis, angulis posticis subdentiformibus, basi leviter bisinuata; elytris tuberculis minutis instructis, his seriatim minus regulariter positis; tibiis anticis modicis, dente superiori (prope medium posito) subobsoleto; unguiculis simplicibus; pygidio æque ac prothorace, hispido. Long., 14 mm.

The clypeus resembles that of *M. sordidus*, Boisd. The setæ on the head, thorax, and pygidium are of a golden brown colour, and nearly as long as the basal joint of the antennæ. They stand erect, but their apical third part is bent over backwards. The setæ on the elytra are of similar form and colour, but being shorter and much less dense are not so conspicuous. The sculpture of the elytra is very difficult to describe. Owing to the projection (above the punctures) of the tubercles within the punctures, and their frequent coalesence with each other, the surface of the elytra (when not viewed from directly above it) seems to be confusedly covered with rows of short transverse ridges mingled with minute conical granulations. There are about 20 of these rows, and nearly 40 granulations in each of them.

This species is probably allied to *variolosus*, Macl., and *longitarsis*, Waterh., both unknown to me. Compared with the former it is larger, with the clypeus more deeply emarginate, the elytra differently sculptured, the legs differently coloured, &c. From the latter it differs by the conspicuous long setæ of the head, thorax, and pygidium; by the shorter basal joint of the hind tarsi, &c., &c.

Taken at King George's Sound by E. Meyrick, Esq.

M. crenaticollis, sp. nov. Brevis, convexus, piceus, minus nitidus, sat confertim granulatus, granulis setiferis; clypeo sat leviter exciso, lateribus obliquis fortiter bisinuatis; prothorace postice leviter angustato, lateribus rotundatis fortiter crenulatis (fere serratis) postice sinuatis, angulis posticis fere rectis, basi leviter bisinuatâ; elytris tuberculis oblongis instructis, his seriatim positis, interstitiis 5° 9° que ceteris latioribus; tibiis anticis tridentatis, unguiculis simplicibus. Long., 9 mm.

The emargination of the clypeus is very well marked, but evidently shallower than in *M. sordidus*, Boisd., the bisinuation of its sides somewhat stronger than in that insect. The lateral margins of the thorax are each cut into about 20 teeth, each of which is scarcely shorter than one of the thoracic setæ. As the setiferous tubercles are raised above the surface of the insect, it has no punctures rightly so called. The elongate tubercles form about 18 rows on the elytra, each row containing less than 30 tubercles. The setæ are of a pale brown colour, but are not particularly conspicuous. The middle tooth of the front tibia is fairly well defined, and is about intermediate in position between the base of the tibia and the apex of the terminal tooth. The widening of the fifth and ninth (and in a less degree of several other) intervals between the rows of granulations on the elytra is very noticeable.

Taken by Mr. B. S. Rothe, of Sedan, S.A.

N.B.—The South Australian Museum, Adelaide, contains a specimen ticketed "S.A.," which I cannot regard as distinct from that sent me by Mr. Rothe, although it is larger (11 mm.), somewhat darker in colour, and has the granulations on the surface of the thorax not quite so strong. I have also seen two specimens taken by Mr. J. Anderson on Boston Island.

M. rugosipes, sp. nov. Brevis, convexus, rufo-piceus, minus nitidus; clypeo triangulariter, minus fortiter exciso lateribus obliquis vix sinuatis; prothorace creberrime punctato, antice angustato, lateribus rotundatis vix crenulatis, angulis posticis subdentiformibus, basi fortiter lobatâ; elytris seriatim punctulatis tuberculatisque; tibiis anticis obtuse minus fortiter tridentatis; tibiis intermediis et posticis in medio margine externo bi-vel trituberculatis; unguiculis simplicibus. Long., 10 mm.

The shape of the thorax is remarkable in this species. From the front, which is the narrowest part, it widens with gently-curved margins nearly to the base, and then is rapidly narrowed, with a strong curve, to the posterior angles, which are dentiform; but behind the posterior angles the thorax is quite strongly emarginate in such manner that the middle of the basal portion forms a conspicuous lobe. The sculpture of the elytra resembles that of *M. major*, mihi. The external outline of the anterior tibiæ might almost be called "strongly bisinuate" rather than "tridentate." On the intermediate and hind tibiæ two or three of the asperities on the middle of the external edge exceed the rest in prominence much more noticeably than is usual in the genus.

I obtained a single specimen of this insect some years ago from Victoria, but the exact locality of its capture is unknown to me.

LIPARETRUS.

L. phœnicopterus, Germ.—In his recent paper on *Liparetrus*, the Hon. W. Macleay adds some particulars to those originally furnished by Germar regarding this species. I have no doubt Mr. Macleay's identification of Germar's species is accurate, inasmuch as (so far as I know) there is only one South Australian species of the same group of *Liparetrus* in which the pilosity on the disc of the thorax is (as Germar describes it in *phœnicopterus*) in contrast by its dark colour with that at the sides; and that species is plentiful and widely distributed. There still remain, however, several characters of the above-mentioned species that I have not seen recorded, viz.:—That in many examples the elytra are more or less infuscate or blackish at the base, and that the basal joint of the anterior tarsi is very peculiar in form. In the male it is almost square, attached to the tibia by one of the corners, so that the tarsus looks as if it had been broken off and gummed on again; in the female it is much narrowed at the base, and the basal portion is bent, at an angle of about 45 deg. to the axis of the tarsus, the apex of this bent portion being the point of attachment to the tibia. In the male the claws of this tarsus are short and strongly bent, the inner claw much more strongly than the outer; in the female the claws are very similar to those of the male, but are a little more slender, and are equally bent.

There is another species very closely allied to *L. phœnicopterus*, but having the front tarsi and claws of the male quite different, and the hair on the upper surface paler, which is widely distributed in South Australia. It must be still more closely allied to the Queensland *L. fulvohirtus*, Macl. It seems so improbable that an insect having a wide range in Queensland and also in South Australia should have failed to be noticed in New South Wales that I think the South Australian insect is probably not identical with the Queensland one, but as it agrees very fairly with the *description* (I observe no discrepancy except that the thorax is hardly so coarsely punctated as from the description I should expect it to be in *fulvohirtus*, and that the clypeus is somewhat more strongly emarginate) I abstain from giving it a new name.

L. fimbriatus, sp. nov. Niger; antennis (clavâ exceptâ), palpis, tarsis, tibiis anticis et elytris (basi lateribusque exceptis) rufescentibus; capite crebre subtiliter punctato; prothorace capillis longis brunneis erectis fimbriato, sat fortiter nec crebre punctato; elytris glabris subnitidis sparsim punctatis, striis 3 geminatis punctatis instructis; pygidio crasse (nec profunde) crebrius punctato, sparsim albo-hirto; subtus sat dense albido-hirtus; tibiis anticis tridentatis; unguiculis basi tuberculo setifero instructis;

maris clypeo antice reflexo leviter emarginato, lateribus pone apicem valde emarginatis, angulis anticis acutis; tarsis unguiculisque anticis fortiter incrassatis, his apice abrupte arcuatis; feminæ clypeo antice reflexo vix emarginato, lateribus vix sinuatis, angulis anticis subrotundatis; antennis noviesarticulatis. Long., 7-8½ mm.

The fringe of erect, moderately close and very long hairs completely surrounding the prothorax (the rest of the upper surface being glabrous) gives this insect a peculiar appearance. The hairs along the front of the thorax are evidently darker in colour than those along the base.

Compared with *L. phœnicopterus*, Germ., the clypeus of the male scarcely differs, while that of the female is less sinuated at the sides; the head is more closely, the thorax very similarly punctated; the elytra differ chiefly in being darker along the base and sides, and having the geminate striæ more distinct; the pygidium is less closely punctured, and the whole insect is incomparably less hairy.

The basal joint of the hind tarsi equals about two-thirds of the second joint.

This species is common on flowers near Tumby Bay in the Port Lincoln district in early summer.

L. caviceps, sp. nov. Niger, iridescens; antennis (clavâ exceptâ) palpisque rufis, tarsis, plus minusve piceis; prothorace capillis (antice sparsis erectis longis, postice crebris retrorsum directis brevibus, ad latera crebris longis erectis) fimbriato; clypeo nitido confuse sat crasse punctato, marginibus reflexis, antice subtruncato, angulis rotundatis sutura postice haud arcuata; capite opaco sat fortiter nec crebre punctato, antice longitudinaliter impresso (nonnullis exemplis obscure et obtuse bituberculato); elytris fortius sparsim punctatis, striis geminatis instructis, his subtilius punctatis; pygidio propygidioque glabris, crebre crasse (feminæ? quam maris? crassius) nec profunde punctatis; tibiis anticis bidentatis; tarsorum posticorum articulo primo secundo fere dlupo longiore; subtus cinereo-pilosus; antennis noviesarticulatis. Long., 7-8½ mm.

This species seems to be well distinguished by the strong broad furrow running down the forehead from near the base to the apex, at which point there is in some specimens a minute tubercle on either side. In the specimens which I take to be females the iridescence is conspicuous and brilliant over the whole upper surface, and the puncturation of the pygidium and propygidium is quite rugose; in a single specimen, which I judge from a slight incrassation of the anterior claws to be the

male, the iridescence is very slight, and the hind parts of the body are punctured more smoothly.

This species occurs in the Port Lincoln district, but I have met with it only rarely.

L. senex, sp. nov. Niger, iridescens; antennis (clavâ exceptâ), palpis, tarsisque rufis; pedibus anticis et intermediis plus minusve rufescentibus; prothorace capillis longis albidis erectis ad latera fimbriato; clypeo nitido crasse leviter punctato, antice tridentato (maris sat fortiter, feminæ vix evidenter), suturâ postice arcuatâ; capite minus nitido multo crebrius punctato; prothorace sparsim subtiliter punctato, postice canaliculato; elytris fortius nec crebre punctatis, striis geminatis modice distinctis, pygidio propygidioque sat confertim punctatis; tibiis anticis fortiter tridentatis; tarsorum posticorum articulo primo secundo subæquali; maris tarsis anticis sat fortiter incrassatis; subtus griseo et brunneo pilosus; antennis novies articulatis; tarsis robustis. Long., 8-10 mm.

There are specimens of this insect in the South Australian Museum; one of them is ticketed as having been taken by Mr. Tepper at Murray Bridge; the others are unticketed.

L. gracilipes, sp. nov. Niger, iridescens; antennis palpis pedibusque piceis vel rufopiceis; prothorace ad latera capillis longis subtilibus, elytris capillis brevibus crassis, nigrofimbriatis; clypeo subnitido crasse leviter punctato, antice rotundato-truncato vix evidenter bisinuato, suturâ postice parum arcuatâ; capite confertim crebrius punctato; prothorace sparsim subtiliter punctato, postice canaliculato; elytris fortius nec crebre punctatis, striis geminatis sat distinctis; pygidio propygidioque sat confertim punctatis, hoc medio longitudinaliter biimpresso; tibiis anticis maris extus bisinuatis, parte apicali angustata producta, feminæ fortiter tridentatis; tarsis omnibus gracilibus, posticorum articulo primo secundo subæquali; subtus griseo et brunneo pilosus; antennis novies articulatis.

This insect seems to occur near Adelaide, specimens in the South Australian Museum being ticketed as having been taken by Mr. Tepper at Mitcham and Belair. I have taken it in the western districts of Victoria.

The preceding three species belong to a section of *Liparetrus* probably numerous, and so far as yet known confined to South and West Australia. Its members agree in having their bodies (except the antennæ, palpi, and legs, which are sometimes more or less reddish) of a uniform deep black, which in some lights is brilliantly iridescent; the upper surface of the head, thorax, and elytra glabrous (save that those parts are surrounded with

fringes of hair); the under surface rather thickly pilose, and the elytra very short. The first description appertaining to them was published by Germar in 1848, in the "Beiträgs zur Insektenfauna von Adelaide," under the name *iridipennis*. This brief description (founded on a single female specimen) would apply to almost any member of the group, but the Hon. W. Macleay, of Sydney, in a paper recently published by the Linn. Soc. of New South Wales, furnishes details omitted by Germar. Since 1848 three more species of the group have been described, so that the three described in this paper bring up the number to seven. The following table will enable the student to distinguish them *inter se* :—

A. Basal joint of posterior tarsi twice the length of the second joint.
  a. Clypeus of male tridentate in front. Size, about 9 mm. ... ... *iridipennis*, Germ.
  aa. Clypeus not tridentate. Size, about 6 mm. *convexior*, Macl.

AA. Basal joint of posterior tarsi about half again as long as second joint.
  a. Forehead longitudinally sulcate. Elytra quite concolorous, with prothorax ... *caviceps*, Blackb.
  aa. Forehead not sulcate.* Elytra of a pitchy subiridescent colour ... ... *rotundipennis*, Macl.

AAA. First and second joints of posterior tarsi not much different in length.
  a. Pygidium and propygidium densely clothed with white scales ... ... *tristis*, Blanch.
  aa. Pygidium and propygidium glabrous, or nearly so.
    b. Propygidium with two short longitudinal furrows,† the space between which is elevated, as though pinched up. Hairs fringing the thorax black; tarsi very slender ... ... *gracilipes*, Blackb.
    bb. Propygidium normal; thorax fringed with whitish hairs; tarsi very robust ... ... *senex*, Blackb.

It should perhaps be noted that some specimens of *L. picipennis*, Germ., are coloured somewhat similarly to the insects mentioned in the preceding table, but they may be readily distinguished by their elytra extending nearly or quite to the apex of the propygidium.

L. diversus, sp. nov. Ovatus; niger; parum, nitidus, antennis (clava excepta) palpis pedibusque rufis; elytris lividis,

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* This colour leads me to doubt whether *L. rotundipennis* (which I have not seen) should really be included in this group.

† These furrows are sometimes faintly defined, sometimes very deep, but appear to be always discernible.

lateribus apiceque infuscatis ; supra ubique capillis longis crassis (in capite, et in prothoracis elytrorumque disco, brunneis vel piceis ; in marginibus albis) sparsim vestitus ; subtus et in pygidio propygidioque dense albo-tomentosus ; clypeo antice rotundato-truncato ; capite prothoraceque opacis ; hoc transverso sparsissime, illo minus sparsim, fortiter punctatis ; elytris subnitidis crasse vix seriatim punctatis ; tibiis anticis in medio obsolete dentatis, apice in dentem longum producto ; tarsorum posticorum articulo 1° 2° paullo longiore. Long., 6½ mm.

A very distinct little species, not very closely allied, I think, to any yet described. Probably it is most at home near *L. discipennis.*

It was taken in Western Australia by Mr. Meyrick.

L. nigro-umbratus, sp. nov. Late ovatus ; sat nitidus ; niger ; antennis, palpis, tarsisque, rufo-piceis ; elytrorum disco cupreo-lurido ; capite prothoraceque dense nigro-pilosis ; subtus cinereo-pilosus ; clypeo antice rotundato-truncato, marginibus sat fortiter reflexis ; capite prothoraceque crebre sat fortiter, elytris sparsim subtilius, pygidio propygidioque longe fulvo-pilosis sat sparsim nec fortiter, punctatis ; striis geminatis, leviter notatis ; tibiis anticis alterius sexus leviter, alterius fortiter, tridentatis ; tarsis posticis gracilibus elongatis, articulo 1° et 2° subæqualibus ; antennis 9-articulatis. Long., 10-11 mm.

Occurs in various localities near Adelaide.

Allied to *L. erythropterus*, Blanch., but differing *inter alia* in its greater pilosity and in the absence from the thorax of a channel and from the propygidium of a keel. The upper tooth on the anterior tibiæ is much smaller than the others, so that in the sex (probably male) in which the teeth are feebly developed this one is only barely indicated.

Mr. Tepper has shown me a very remarkable *Liparetrus* from Kangaroo Island, which I think is an extreme variety of this insect. It differs in being much smaller (long., 8 mm.) and having the lurid colouring (which in the type occupies only the disc of the elytra, and shades obscurely off into the surrounding black) extended over the whole of the elytra except a narrow basal margin.

L. Rothei, sp. nov. Ovatus ; sat nitidus ; piceo-niger, antennis (clava infuscata excepta), palpis, pedibusque rufescentibus, elytris rufo-piceis ; supra sat glaber ; prothorace ad latera et antice capillis longis nigris, elytris postice ciliis fuscis pervalidis, fimbriatis ; subtus cinereo-pilosus ; pygidio propygidioque sparsissime pilosis ; clypeo (? alterutrius sexus solum) reflexo, antice truncato, angulis rotundatis ;

hoc et capite prothoraceque crasse nec profunde, elytris crasse nec profunde subseriatim, pygidio propygidioque sparsim profundius, punctatis; striis geminatis vix evidenter impressis; elytris brevibus; tibiis anticis (? alterutrius sexus solum) apice longe leviter arcuatim productis, margine externo leviter bidentato; tarsorum posticorum articulo 1° 2° duplo longiore antennis novies articulatis (?). Long., 4 mm.

This is one of the smallest species of the genus known to me. The antennæ of the single specimen placed in my hands for description are not capable of satisfactory examination, but they are evidently peculiar, having the portion between the second joint and the club exceptionally short and thick, and apparently consisting of four joints, though these joints are so small and crowded together that I cannot be absolutely certain on this point without breaking an antenna off. The anterior tibiæ (with two obscure teeth on the external margin, and then one very long and only slightly curved at the apex) are also peculiar, as is the fringe of long thick bristles at the apex of the elytra. These latter project across the narrow riband-like membranous border that edges the hinder portion of the elytra so conspicuously in some *Liparetri*, and which in this species is yellow and very broad. The general appearance of the insect is, however, quite that of an ordinary *Liparetrus*, and it is much of the build of *bituberculatus*, Macl.

Taken by Mr. Rothe, near Sedan, South Australia.

L. analis, sp. nov. Ovatus; supra glaber; nitidus; ater, antennis palpis pedibus, pygidio, propygidio, et subtus tota superficie (metasterno ad latera infuscato excepto) læte rufis; prothorace antice et ad latera capillis fulvis fimbriato; clypeo crasse nec fortiter punctato, antice reflexo rotundato; capite crebre sat fortiter, prothorace fortiter minus crebre, elytris sat fortiter subseriatim, punctatis; his striis geminatis evidenter impressis; propygidio antice vix evidenter, hoc postice et pygidio toto fortiter, punctatis; tibiis anticis tridentatis; antennis novies-articulatis; subtus obscure pilosus; tarsi postici specimini descripto desunt. Long., 7½ mm.

Although the loss of the hind tarsi involve the omission from the preceding description of an important character, yet the species is so widely distinct from its congeners, that I have no hesitation in describing it. It must bear a good deal of resemblance to *L. erythopygus*, Blanch. (indeed, if my identification of that species is correct, its superficial resemblance is very close), which, however, seems to have antennæ consisting of only eight joints. The position of *L. analis* in Mr. Macleay's

arrangement of the genus would probably be near *L. rubefactus* of that author.

There is a single specimen in the South Australian Museum.

L. insularis, sp. nov. Ovatus; supra (pygidio propygidioque sparsim breviter griseo-hirtis exceptis) glaber; nitidus; piceus aut rufopiceus, tibiis tarsisque nonnullis exemplis dilutioribus; prothorace capillis longis pallidis fimbriato; subtus longe sat sparsim pallide pilosus; clypeo crebre fortius, prothorace minus crebre fortius, elytris transversim rugose subseriatim sat fortiter, punctatis; his (maris fere, feminæ omnino) propygidium tegentibus, striis geminatis vix evidenter impressis; pygidio maris obscure, feminæ sparsius sat fortiter punctato; tibiis anticis tridentatis; antennis novies articulatis; tarsorum posticorum articulo primo secundo subæquali. Long., 5-5½ mm.

Allied to *L. picipennis*, Germ. The clypeus is truncate in front in the male, rounded in the female.

Collected on Kangaroo Island on flowering shrubs by Mr. Tepper, of the South Australian Museum, whose indefatigable labours are very rapidly developing the national collection, and who probably possesses the best knowledge of any living person of the habits and localities of South Australian insects.

L. simplex, sp. nov. Sub-hemisphæricus; supra (pygidio propygidioque sparsim breviter griseo-hirtis exceptis) glaber; prothoracis lateribus capillis pallidis fimbriatis; subtus fulvo-pilosus; nitidus; niger, subiridescens, antennis palpisque testaceis, pedibus elytrisque plus minusve rufescentibus; clypeo antice rotundato-truncato (? alterutrius sexus solum) crasse nec profunde, capite duplo (crebrius subtiliter et sparsim fortius), prothorace sparsim minus fortiter, elytris subseriatim sat fortiter, propygidio crebre sat fortiter, pygidio sparsim profunde, punctatis; striis geminatis evidenter impressis; propygidio permagno; tibiis anticis apice longe productis, margine externo minute bidentato; antennis novies-articulatis; tarsorum posticorum articulis primo et secundo sat longis, subæqualibus. Long., 7½ mm.

The sub-hemisphæric form of this species gives it a very distinct appearance, and its anterior tibiæ are peculiar, being longitudinally produced at the apex after the manner of *Diphucephala*, while the external margin is interrupted above the middle by a very small tooth, and below the middle by a somewhat larger one. The puncturation of the pygidium is moderately close at the extreme base, becoming very sparing and very strong towards the apex. The insect may be best placed perhaps not far from *L. rotundipennis*, Macl.

There is a single specimen in the South Australian Museum. I do not know where it was taken.

L. modestus, sp. nov. Ovatus; supra glaber; sat nitidus; rufo-piceus, antennis, palpis, pedibus, elytris, abdomineque rufis; prothoracis lateribus capillis pallidis fimbriatis; subtus cinereo-pilosus; clypeo (? alterutrius sexus solum) antice rotundato, suturâ arcuatâ fortiter impressâ, illo et capite crasse rugatis, vix evidenter punctatis; prothorace obscure canaliculato sparsim subtiliter, elytris crebrius fortiter, pygidio propygidioque obscure crasse, punctatis; striis geminatis elytris parum evidenter impressis; propygidio sat magno; tibiis anticis apice longitudinaliter fortiter productis, margine externo vix dentato; antennis novies articulatis; tarsorum posticorum articulo primo secundo sat longiore. Long., 4½ mm.

The position of this little species in the genus should be, I think, near the preceding (*L. simplex*). It is no doubt in many respects allied to the West Australian *L. rubefactus*, Macl., but differs in the absence of a *carina* from the pygidium, the arcuate clypeal suture, sculpture of the head, &c., &c.

There is a single specimen in the South Australian Museum.

L. dispar, sp. nov. Late ovatus; sat nitidus; niger; antennis (? clavo excepto), palpisque testaceis; elytris (marginibus late obscure infuscatis exceptis) tibiis anticis et tarsis omnibus rufescentibus; capite prothoraceque nigro pilosis; subtus cinereo-pilosus; clypeo (? alterutrius sexus solum) antice rotundato, marginibus sat fortiter reflexis; capite crebre sat fortiter; prothorace duplo (subtilius et fortiter), elytris pygidio propygidioque fortiter sat crebre, punctatis; striis geminatis evidenter impressis; pygidio basi carinato, utrinque sat fortiter sulcato; elytris propygidii partem majorem tegentibus; tibiis anticis (? alterutrius sexus solum) externe sat fortiter tridentatis; tarsorum posticorum articulo 1° 2° vix breviori; antennis 9 articulatis. Long., 10 mm.

This species is evidently allied to *picipennis*, Germ., from which the black pilosity of its head and thorax, the complete absence of a thoracic channel, larger size, different colour, and different thoracic puncturation easily distinguish it.

There is a single specimen in the South Australian Museum, but the locality of its capture is not known.

L. agrestis, sp. nov. Ovatus, minus nitidus; niger, antennis (clavâ exceptâ), palpis, pedibus anticis, elytris (marginibus anguste infuscatis exceptis), pygidio et propygidio rufis; pedibus posticis piceis; supra glaber, prothorace antice et ad latera capillis longis pallidis sparsis fimbriato, postice

pallide ciliato, pygidio propygidioque sparsim pallide pilosis; subtus sat dense cinereo pilosis; clypeo (? alterutrius sexus solum) antice rotundato-truncato, marginibus minus reflexis; capite pone medium transversim carinato; hoc crebre subtilius, prothorace fortius minus crebre; elytris et fortius et sparsius vix seriatim, propygidio crebre minus fortiter, pygidio minus crebre sat fortiter, punctatis; striis geminatis evidenter impressis; elytris propygidii partem dimidiam tegentibus; tibiis anticis (? alterutrius sexus solum) externe obtuse tridentatis, unguiculis anticis sat incrassatis; antennis octies articulatis; tarsis posticis elongatis, articulo 1° 2° paullo longiore. Long., 8 mm.

A single specimen of this species (which does not seem to resemble any hitherto described as having antennæ of only eight joints) was sent to me from Western Australia by E. Meyrick, Esq. The distinct, though not strong, incrassation of its front claws points to the probability of its being a male. The teeth on the anterior tibiæ are equidistant, or nearly so; the two nearer to the apex are only moderately large, and the upper one is very small.

L. lætus, sp. nov. Elongato-ovatus, sat nitidus; rufus, capite pectoreque nigris, prothorace elytrisque antice infuscatis; supra glaber; prothoracis, lateribus capillis longis pallidis fimbriatis, margine postico pallide ciliato; subtus pallide pilosus; clypeo (? alterutrius sexus solum) antice rotundato-truncato, suturâ minus fortiter arcuatâ; illo, æque ac capite, rugoso punctato; prothorace haud canaliculato fortiter minus crebre, elytris sparsim crasse, pygidio propygidioque minus fortiter sat crebre, punctatis; striis geminatis obscure notatis; elytris propygidium fere tegentibus; tibiis anticis apice longitudinaliter arcuatim productis, margine externo medio obtuse dentato; antennis octies articulatis; tarsis posticis sat brevibus, articulis, 1° et 2° subæqualibus. Long., 7 mm.

This species is probably not unlike *L. monticola*, Fab., though evidently distinct. The very brief original description calls that species "*minuta*," which my insect is not, as compared with other species of *Liparetrus* described by Fabricius, and also calls the elytra "*abdomine multo brevioribus*" ("*abdomine brevioribus*" being the expression applied to the elytra of others of the genus), which is evidently inapplicable to an insect with exceptionally long elytra. The Hon. W. Macleay, in his recent paper on *Liparetrus*, gives a detailed description of an insect which he considers to be *L. monticola*, Fab. (very probably on good grounds), but which does not appear to me

to fit in very well with the original description. Taking it for granted, however, that Mr. Macleay is right, *L. lætus* must differ from *monticola* in respect of the much coarser puncturation of its upper surface and (unless Mr. Macleay's description applies only to one sex) in respect of the shape of its anterior tibiæ.

This insect was sent to me from Western Australia by E. Meyrick, Esq.

L. Macleayi, sp. nov. Ovatus, minus nitidus; niger, palpis tibiis anticis tarsis et elytrorum disci parte posteriori plus minusve rufescentibus, antennis piceis; supra nigro, subtus cinereo-hirsutus; clypeo reflexo (? alterutrius sexus solum) antice subemarginato truncato, crasse nec profunde punctato; capite subopaco creberrime, prothorace sat crebre, elytris minus crebre minus seriatim, rugoso-punctato; striis geminatis vix evidenter impressis; pygidio propygidioque fortiter rugoso-punctatis (æque ac *L. salebrosi*), carinatis; tibiis anticis (? alterutrius sexus solum) tridentatis, dente summo parvo; tarsis posticis gracilibus, articulo 2°, 1° sat longiore; antennis octies articulatis. Long., 7½ mm.

Of each elytron of this insect the hinder two-thirds contains a large dull red blotch, which, however, does not touch the margin or suture, being everywhere surrounded (somewhat narrowly, except in front) by the black ground colour. The species is rather closely allied to *L. ferrugineus*, Blanch., differing, however, *inter alia* by the darker pilosity on the upper surface, and the extremely strong and rough sculpture of the pygidium and propygidium.

I took a single specimen at Ararat, Victoria, by sweeping flowers in September.

L. aureus, sp. nov. Ovatus crasse puncturatus, puncturis singulis squamas singulas minutas ferentibus; piceus; capite, prothorace pygidio, propygidio et pedibus capillis longis aureis vestitis; elytris capillis brevioribus minus dense instructis, vix striatis; clypeo, antice et ad latera, reflexo, truncato; tibiis anticis bidentatis; tarsis posticis sat robustis, articulo secundo primo paullo minus duplo longiore; subtus aureo-hirtus; antennis 8 articulatis. Long., 7½ mm.

Probably allied to *L. mæchidioides*, Macl., but double the size, and densely clothed (except on the elytra) with very long decumbent golden hairs. On the elytra the pilosity is shorter and less dense. The elytra are not striated, but the punctures run in rows, and the interstice between the fourth and fifth rows is conspicuously wide. The basal joint of the hind tarsi

being evidently more than half as long as the second distinguishes this species from many of its allies—the non-sinuosity of the sides of its clypeus from others—and the *Mœchidius*-like nature of its puncturation distinguishes it from all its described congeners of the *basalis* group that approach it in size.

There is a single specimen in the South Australian Museum, Adelaide.

L. bicolor, sp. nov. Oblongo-ovalis; crasse nec profunde punctatus; nigro-piceus; antennis (clava excepta), palpis, pedibus anterioribus et intermediis, tarsis posterioribus, elytris, pygidio et propygidio plus minusve rufis; capite, prothorace, scutello, pygidio propygidioque longe aureo-pilosis; prothoraci in disco capillis nigrescentibus; elytris subseriatim puncturatis, puncturis singulis (his in pygidio propygidioque etiam) squamas singulas minutas ferentibus; interstitiis alternis obscure elevatis; clypeo reflexo antice truncato, lateribus leviter emarginatis; tibiis anticis apice bidentatis, basi vix dentatis; tarsis posticis gracilibus, articulo secundo primo circiter triplo, longiore; subtus sat sparsim aureo-hirtus; antennis 8-articulatis. Long., $7\frac{1}{2}$ mm.

This is an obscure little species distinguished by its *Mœchidius*-like puncturation, the peculiar sculpture of its elytra, and the very slender hind tarsi, with unusually long second joint. It probably resembles *striatipennis*, Macl., but is smaller, and differs in the colour of the thoracic pilosity, of the elytra, &c., and, as Mr. Macleay does not mention the puncturation of *striatipennis* as being of the *Mœchidius* type, probably in that respect also.

A single specimen in the South Australian Museum, Adelaide, is ticketed as having been taken at Summerton.

L. granulatus, sp. nov. Oblongo-ovalis; nigro-piceus; antennis (clava excepta), palpis pedibusque plus minusve rufescentibus; capite prothoraceque fortius nec crebre granulatis, granulis singulis squamas singulas pallidas adpressas ferentibus; elytris brevibus postice attenuatis seriatim granulatis, granulis (ut prothoracis) setigeris; pygidio propygidioque (æque ac prothorax) granulatis setulosisque; hoc permagno; illius disco toto excavato nitido, excavatione intra canaliculata, antice tuberculo obtuso instructa; clypeo antice truncato, lateribus sat emarginatis; tibiis anticis bidentatis; tarsorum posteriorum articulo secundo primo duplo longiore; subtus granulatus, setis longioribus pallidis instructus; antennis 8-articulatis. Long., $6\frac{1}{2}$ mm.

Small as it is, I consider this the most remarkable *Liparetrus* I have seen. Its sculpture throughout is exaggeratedly *Mœchidius*-like. Its elytra are scarcely longer than the dis-

tance from their apex to the apex of the pygidium, and are so narrowed behind that (viewed from above) the hind body is visible on both sides outside the hinder two-thirds of the elytra. The pygidium is most extraordinary. Not far from its base a kind of ridge runs transversely across it, which is gathered up in the middle into an obtuse tubercle. This ridge forms the anterior boundary of a large depression or excavation, which is much more shining than the rest of the segment, and is longitudinally divided by a deep furrow. The portion of the pygidium bearing this sculpture is obliquely bent under towards the ventral surface of the hind body.

A single specimen has been submitted to me by Mr. Rothe, taken, I presume, in the interior of South Australia. I am uncertain as to its sex.

MACLEAYIA, *gen. nov.*

Mentum planum, antice haud emarginatum; palpi labiales brevissimi, maxillares modici, art° 1° brevi, 2° et 3° subæqualibus, 4° 3° paullo longiore; labrum vix conspicuum; clypeus magnus antice subemarginatus, lateribus reflexis, sutura vix conspicua; antennæ 9-articulatæ, sat longæ, clava articulis reliquis omnibus conjunctis vix breviore, altero sexu 5, altero 3, articulata; prothorax transversus, basi rotundato-truncatus; scutellum magnum fortiter transversum; elytra prothorace plus duplo longiora, propygidii ad medium attingentia; hoc et pygidium perpendicularia; pedes robusti, tibiis anticis altero sexu 3-dentatis, altero simplicibus apice attenuatis; unguiculis simplicibus.

Of this remarkable genus I possess three specimens taken in Western Australia by E. Meyrick, Esq. Two of them are sexually similar, and are probably attributable to the same species; they have the anterior tibiæ quite simple, and the antennal club three-jointed. The other has the anterior tibiæ tridentate, and the antennal club of five joints, and seems specifically distinct from the other two. I am unable to say which is the male.

M. singularis, sp. nov. Elongato-ovata; sat nitida; nigra, antennis (clava excepta), palpis, tibiis tarsis et elytris plus minusve rufis; supra glabra, prothorace et elytris capillis longis fulvis ad latera fimbriatis; subtus sparsim fulvo pilosa; clypeo (? alterutrius sexus solum) reflexo, antice rotundato-truncato; hoc et capite fortius sat crebre, prothorace conspicue canaliculato fortius minus crebre, scutello transverso magno sparsim minus fortiter; pygidio propygidioque subopacis albo squamosis sparsim fortiter, punctatis; elytris propygidii partem dimidiam tegentibus punctato-striatis, interstitiis latis convexis; tibiis anticis

(? alterutrius sexus solum) tridentatis; tarsorum posticorum articulis 1° et 2° subæqualibus; antennis novies articulatis, flabello 5 articulato. Long., 7½ mm.

M. hybrida, sp. nov. Ovata; minus nitida; supra glabra, prothorace et elytris capillis albis fimbriatis, illo postice albo-ciliato; pygidio propygidioque pruinosis; illo sparsim albo-hirto; subtus pruinosa sparsim fortiter punctata longe albo-hirta; clypeo antice (? alterutrius sexus solum) leviter emarginato marginibus reflexis, sparsim fortiter punctato; capite prothoraceque subtilius sat crebre puncturatis (puncturis intus nitidis), hoc nullo modo canaliculato; scutello transverso, punctato; elytris striatis, striis crasse punctatis, his prope suturam et marginem externum profundioribus, interstitiis nonnullis subconvexis; pygidio propygidioque pruinosis, sparsim nec fortiter puncturatis, puncturis æque ac thoracis intus nitidis; tibiis anticis (? alterutrius sexus solum) apice longitudinaliter productis, margine externo vix bisinuato; tarsorum posticorum articulis 1° et 2° subæqualibus; antennis novies articulatis, articulis 5° et 6° intus evidenter productis, flabello 3 articulato. Long., 9 mm.

M. hybrida, var.? Elytris pedibusque nigrescentibus. Long., 8 mm.

The antennæ of this insect seem to be intermediate between those of the *preceding* species and of a typical *Liparetrus*, for although the club consists of only three joints, the two joints preceding it are quite distinctly (though slightly) produced on the inner side. The antennal club is longer, narrower, and more pointed at the apex than that of any *Liparetrus* known to me. Apart from such distinctions as are probably sexual, this species differs from the preceding in the much greater opacity and much closer puncturation of its thorax.

I can discover nothing but size and colour to distinguish the small dark specimen called "var ?" from that described.

This species was sent to me from Western Australia by E. Meyrick, Esq.

Remarks on a Geological Section at the New Graving Dock, Glanville, with special reference to a supposed Old Land Surface now below Sea Level.

By Walter Howchin, F.G.S.

[Read December 7th, 1886.]

The excavations in connection with the new Graving Dock at Glanville have exposed what is probably the best section of the local Post-Tertiary beds hitherto known. By a comparison of the strata at the Glanville excavation with those penetrated in the making of the "New Dock," as shown by samples of the latter exhibited in the Port Adelaide Museum, there appears to be a general correspondence between the two sections, but the beds thicken slightly as they pass westward, the limestone crust in the "New Dock" being at a depth of 25 ft., whilst in the Glanville excavation it is about 27 ft. below the natural surface. The section now under review is a particularly interesting one, as it supplies on what, I think, indisputable evidence that these recent marine beds which occupy our seaboard were not deposited in one uninterrupted succession, but that they occur as an *older* and a *newer* marine bed, with an old land surface intercalated and separating them. The section may be given as follows:—

		ft.	in
No. 1.	Made ground	6	0
2.	Surface clay	1	0
3.	Whitish sea-sand with shells ...	6	0
4.	Do. with bands of decomposed vegetable matter	9	0
5.	Blue clay / Brown clay	11	0
6.	Limestone crust	0	1
7.	Calcareous sand and shells, about ...	4	0
8.	Brown argillaceous sand (not exposed)	10	0

No. 2 is the ordinary surface clay of the marshy flats bordering the river, lying at or about high water level, and which has accumulated by deposition of material from the tidal waters in their periodical overflow. This clay contains the usual estuarine mollusca of the flats, as well as a few species of foraminifera generally found in such a habitat, the occurrence of the latter proving that within recent times considerable areas of these flats bordering the river were permanently under water.

Nos. 3 *and* 4. Underlying the thin covering of surface clay is

a bed of white sand about 15 ft. in thickness, very full of fossils—Venus, Pectens, Oysters, Pholas, small Gastropods, Polyzoa, Coral, and the usual accumulations of a sea beach are present in great profusion. The lower nine feet of this bed, (as also the upper part in a less degree), is laminated with thin bands of decomposed sea-weed running in lines which maintain their regularity for considerable distances. This bed is an undoubted beach formation. The shells are not *in situ*, but are irregularly heaped and sorted by wave action, whilst the sea-weed is spread out in thin layers, the fronds of the latter being much broken and matted together. Several pieces of wood were found in this bed, one being the trunk of a tree about six feet in length and about six inches in diameter. When this littoral deposit was in course of formation, the present barrier of sand-hills which lines the coast did not exist, and the open sea flowed over what is now Port Adelaide and the low-lying ground in its vicinity.

No. 5. Underlying the above-mentioned beach deposit is a very interesting bed of sandy clay, which, in the aggregate, measures about eleven or twelve feet in thickness. This clay, in its upper part, is of a dark blue colour passing into drab and reddish-brown hues in the lower portions. These colours do not mark divisional lines in the strata, but follow a very irregular course throughout the bed, the differences in colour apparently arising from the more pervious portions of the clay admitting the percolation of water, which has given the lower parts more or less a reddish colour. Immediately at the base of this bed of clay, and resting on the limestone crust, is a layer of coarse red sand a few inches in thickness and is the main water stratum of the section. This bed of sandy-clay or loam is peculiarly interesting from the somewhat anomalous way in which the fossils it contains are arranged. These are apparently limited to the upper three feet of the bed, and do not occur in horizontal layers, but in vertical fissures and pockets. These pockets of sand and shells are most common at the upper limits, near the junction of the clay with the beach deposit that overlies it, and they thin out to narrow lines as they descend into the clay, dying out at about three feet from its upper limits. I think it cannot be doubted that these fossil remains are foreign to the clay in which they are enclosed, and have consequently been derived. The vertical pipes in which they occur have all the appearance of crevices filled with the material from the overlying bed, the white sand and shells, which are often slightly consolidated into stalactitic pipes, showing on the face of the clay in striking contrast to the dark blue colour of the bed in which they are found. Outside these vertical strings of shells, the clay, on either side of them, was

found to give not the slightest trace of organic remains—not even so much as a foraminifer—although the material was carefully washed and searched under the microscope. Moreover, in the clay, especially in the upper portions, the sand proper to the bed is extremely fine and sharp mixed with flakes of mica, whilst the sand in the fossiliferous pipes is comparatively coarse and similar to the beach sand which overlies the clay. From the considerations just set forth it seems a moral certainty that the deposition of the fine, sandy, non-fossiliferous clay was not synchronous with the coarser sand and shells which are included in vertical lines in the upper three feet of the bed, but that the latter is of distinct origin and subsequent date. There appears but one theory capable of explaining the matter. The bed in question, prior to the deposition of the littoral sands now overlying it, must have been at the surface and subject to the desiccating influence of the sun and atmosphere, by which the surface became cracked, much in the way that the clay ground of the marshes around the Port Creek is rent now in the hot season. When in this condition, the sea came in, bringing its drift of sand and shells, which immediately filled up the fissures in the clay, and in this way placed in vertical juxtaposition material of somewhat different geological age.

Nos. 6 *and* 7. The next bed in descending order is a calcareous sand, very rich in fossils, and is about four feet in thickness. This bed is generally loose and friable in its character, but is coated on its upper surface with a "limestone crust," the latter supplying so excellent a floor line for the proposed dock that *Mr. Fletcher decided to make it the base of the excavations, instead of going a foot deeper, as was intended according to the plans. This limestone crust is a somewhat remarkable and suggestive feature. Whilst the bed with which it is associated is highly fossiliferous, this crust is non-fossiliferous, and is evidently a *travertine*, and must have been formed whilst the bed in question was above water and exposed to meteorological conditions. Prof. Tate some years ago showed that the limestone crusts, which form over the calcareous lands in this colony, are the result of evaporation of water charged with the carbonates of calcium and magnesia causing these minerals to aggregate at or near the surface of the ground. If so, then the travertine on the top of the calcareous bed now under consideration, and which is 19½ ft. below present low-water mark, must have been at the surface and dry land subject to the solar rays before the travertine could have been formed. This crust has been but slightly disturbed, so that I

*Since the above was written Mr. Fletcher has informed me that he intends carrying out the original design as to depth.

cannot give an estimate of the average thickness, but I have obtained fragments fully an inch in thickness. I have also obtained portions of a similar travertine and about the same thickness from the excavations recently carried out in deepening the Patawalonga at Glenelg.

If our theory be correct, the section at Glanville affords an interesting record of the oscillations which have taken place in the coast line within comparatively recent times. The calcareous sand and shell bed, which forms the bottom of the excavation, is a true marine deposit, which was probably formed in shallow water, but covered at all states of the tide. The passage from this marine bed to the overlying clay is very abrupt, and looks on the face of it as a case of non-continuity of deposit, a view which the presence of the travertine at the line of juncture strongly confirms. The fine silt or loam which overlies the travertine crust is most probably of fresh-water origin, as the non-occurrence of fossils in it, whilst the beds above and below are highly fossiliferous, is difficult to explain on any other hypothesis. It marks a period of elevation when the marine bed on which it rests was raised above high-water mark and received the wash of fluviatile matter over its surface. Whether the deposit owed its origin to lacustrine conditions or simply river sediment, cannot be shown at present. When this clay was being deposited the drainage of the country may have been locally intercepted in its seaward flow (much as it is at present in the case of the River Torrens), causing a deposit of light clayey and sandy material over a wide area, and which is represented by this clay bed of the Glanville section. Then the vertical fissures which exist in the upper part of this clay bed, with their derived fossil remains, point as forcibly to dry land conditions as does the travertine crust which underlies it. The change in the character of the deposit at the upper parting of this clay bed is also very marked, for the white sand and shells of the littoral deposit which overlies it can be brushed from its upper surface, revealing the dark blue ground of the clay bed sharply defined in the parting. Before the superimposed sixteen feet of beach deposit could be thrown down in the position in which it occurs, we must suppose that there followed once more a depression of the land so as to bring this fresh-water clay below sea level. Such a supposition falls in with the view which Prof. Tate has at various times expressed with regard to the inner line of sand-hills which follow a more or less regular trend from Glenelg to about Dry Creek, that they represent the old coast sand-hills when these recent marine beds were in course of formation.

That there was a considerable interval of time separating the upper and lower marine beds in the section is borne out by the

palæontological evidence. In the upper bed, formed under littoral conditions, all the examples are specifically identical with those now inhabiting our Gulf, and which may be picked up on our beach almost any day. In the lower marine bed, represented by the stratum of calcareous sand and shells, all the forms are recent and agree with known Australian shells, but some of these (as has been pointed out by Prof. Tate), such as *Arca trapezia* and the large foraminifer *Orbitolites complanata*, whilst found in the warmer seas of the Eastern Coast have become extinct in the Gulf, where they formerly existed in immense numbers. A consideration of habitat might account for some of the differences noted in the fauna of the respective beds, but it certainly does not explain the whole of the phenomena. If, for example, *O. complanata*, which is extremely plentiful in the lower marine bed, existed in the Gulf at the time when the upper marine bed was in course of formation, it is unaccountable that examples of this very conspicuous foraminifer should not occur with the other remains in this beach deposit, for in most cases where this form occurs in the waters it is a marked feature in the local shore sands.

From the reasons already detailed, I think there are strong presumptive evidences, based on several collateral lines of proof, that the Post-Tertiary beds of the seaboard do not represent a regular succession of marine beds, but that there was a break in the continuity of their deposition. In the view we have taken, there is an *older* and a *newer* bed of recent marine, with an intercalated formation of fresh-water origin dividing the same, and connected with the fresh-water bed two horizons representing dry-land conditions. In the section of the "New Dock" shown in the Port Adelaide Museum, the white calcareous bed is represented as having been subjected to considerable denudation, gutters having been eroded in the bed to a depth of more than half its thickness, and these subsequently filled with the brown clay which is supposed in this paper to be of fresh-water origin. Assuming this to be a correct representation of the section, there could not be a stronger confirmation of the theory of dry-land conditions at that particular geological horizon.

What may underlie the lower marine bed is not very well known. Mr. Fletcher informed the Field Naturalists in their visit to the section that below this calcareous bed there occurs a bed of loose sand 10 ft. in thickness, and in proof of this he pushed a rod down for about that depth without much difficulty. Subsequent examination has shown that this bed is a loose argillaceous sand, of a brownish colour, the included sand grains being both large and angular. Under this bed of argillaceous sand, in the judgment of Mr. Fletcher, another limestone crust is supposed to occur.

Notes on Australian Coleoptera, with Descriptions of New Species.

By the Rev. T. Blackburn, B.A.

[Read July 5, 1887.]

In the following pages I have the pleasure of offering to the Royal Society a further contribution towards a knowledge of the *Coleoptera* of South Australia. Probably this colony contains a Coleopterous fauna second in extent to none on the Australian continent; and I doubt not that if the opening up of the country in the Far North be accompanied by any systematic attempt to explore the natural history of the districts rendered accessible, the discoveries of new and very interesting species will be so numerous that students will scarcely be able to keep pace with them. Unfortunately, those who are engaged in the work of extending our railways and of settling the newly opened country seldom have any inclination to trouble themselves with the collection of specimens for scientific study, so that it will probably be the case that the knowledge of the fauna will have to depend almost entirely on such occasional visits as may be made for the express purpose of collecting specimens by those who are themselves engaged in natural history studies.

SCARITIDÆ.

PHILOSCAPHUS.

P. Tepperi, sp. nov. Niger; subtus obscure violaceus; capite magno, fortiter bisulcato, utrinque juxta oculos punctis 2 setiferis notato; prothorace sublunulato, postice lobato, canaliculato, vix evidenter rugato, anguste marginato, margine anteriori rugis longitudinalibus subtiliter notato, elytris prothorace vix latioribus, obscure striatis, interstitiis alternis elevatioribus obsolete tuberculatis, margine anteriori medio leviter emarginato utrinque oblique truncato, humeris subdentiformibus, regione laterali abrupte declivi; hac supra antice costa elevata ab humero ad longitudinis medium, postice costa inferiori ab medio fere ad apicem, marginata; tibiis anticis externe tridentatis. Long., 33 mm.

This species appears to differ from all of the genus hitherto described in the sculpture of the grooved lateral sub-vertical

portion of the elytra. From the shoulder a strong keel runs along the upper edge of the groove to about the middle of the length of the elytron, where it passes to the upper surface of the elytron, and there continues as one of the obsoletely tuberculated ridges with which the surface is furnished. Just below the point where this keel ceases to limit the groove, and about 2 mm. nearer to the shoulder, a second keel commences and continues nearly to the apex, so that the groove is suddenly narrowed about the middle of its length. The sculpture of the surface of the elytra is very difficult to describe intelligibly. It seems to consist in a series of scarcely traceable striæ, the interstices between which are (alternately) decidedly and scarcely convex. These convex interstices are intersected by numerous irregular transverse impressions, which seem to divide them into very uneven tubercles. Towards the basal and extreme apical portions all system disappears from the sculpture, and it consists of small granules interspersed among wavy furrows. The sculpture is all lightly impressed and obscure; about a dozen striæ can be faintly discerned on each elytron, though it is hardly possible for the eye to follow any one of them continuously along its course. The anterior tibiæ have three external teeth, and no trace of any more; the apical tooth, which is bent, equals in length the basal two joints together of the tarsus; the next is rather near to it and half its length, a greater interval separates the upper tooth (which is about at the middle of the length of the tibia) from the second, and it is scarcely half the length of the second.

This insect was taken at Angebuckina.

P. crassus, sp. nov. Niger; capite magno fortiter bisulcato, utrinque juxta oculos punctis 2 setiferis notato; prothorace sublunulato, postice lobato, canaliculato, transversim fortiter crasse rugato, late reflexo-marginato, margine anteriori rugis longitudinalibus subtiliter notato; elytris prothorace angustioribus supra fortiter depressis, vix evidenter striatis, seriatim inæqualiter sat fortiter tuberculatis, margine anteriori medio leviter emarginato utrinque oblique truncato, humeris subdentiformibus, regione laterali abrupte declivi longitudinaliter bisulcatâ; tibiis anticis externe 5 dentatis. Long., 33 mm.

The width of the thorax compared with the length is as 13 to $7\frac{1}{2}$. In the preceding insect it is as 11 to 7. The sculpture of the upper surface of the elytra is as follows:—Next the suture are two rows of small and very ill-defined tubercles, among which (especially in the apical half) are some minute granules; then follow three rows of large coarse tubercles (which in the specimen before me are not quite symmetrical on the two elytra)—about ten tubercles in the first row, five in

the second, seven in the external one—the largest of which cover an area scarcely less than that of the insect's eye, but they are not strongly elevated in proportion to the area they cover. The first of these rows terminates apically at the end of the keel that limits on the upper side the upper lateral groove of the elytra; and the space between the external row and the above-mentioned keel, as well as the interstices between the rows, is pretty thickly strewn with small round granules. The lower lateral keel dividing the lateral groove into two very unequal parts (the upper being the narrower) commences a little behind the shoulder, not, however, taking its rise from the upper keel, and both keels terminate considerably short of the apex of the elytra. The apical external tooth of the front tibiæ is nearly as long as the basal three joints together of the tarsus, the four teeth above it being in rotation, each about half the length of that in front of it, so that the topmost tooth (which is above the middle of the tibia) is quite short, though perfectly well defined. Above it there are rudimentary indications of one or two more teeth. The presence of more than three teeth on the anterior tibiæ sufficiently distinguishes this species from all others of the genus hitherto described.

There is a single specimen in the South Australian Museum, but I cannot ascertain where it was found.

BEMBIDIIDÆ.

TACHYS.

T. infuscatus, sp. nov. Elongatus; depressus; piceus; nitidus; prothorace dilutiore; antennis, palpis, mandibulis, pedibus, elytrisque testaceis, his circa scutellum et circa suturæ partem pone medium infuscatis; antennis sat elongatis; prothorace transverso postice angustato, vix evidenter canaliculato, angulis posticis distinctis obtusis; elytris sat parallelis, striis 4 punctatis antice leviter notatis, suturali solum ad apicem attingente, hac fortiter arcuatim recurvâ. Long., $2\frac{1}{2}$ mm.

Compared with the European *T. bistriatus*, Duftschm., apart from colour differences, this insect is somewhat narrower, and more parellel, and much less convex. There is very little difference *inter se* in the profundity of the four elytral striæ, but they are all fainter than the two striæ near the suture in *T. bistriatus*; the recurved stria does not differ much except in being more arched; the stria close to the margin is very much deeper than in *bistriatus*, especially close to the apex, where it widens out and seems to be divided by a short keel. A similar structure exists, but much more obscurely, in *bistriatus*. There are

two rather strong punctures bearing setæ on each elytron, one in front of the middle, one near the apex.

The hinder infuscation of the elytra is subject to variety being very slight in some specimens, and in others occupying the whole of the hinder two-thirds of the disc.

There is a short series of this insect in the South Australian Museum. The specimens were taken near the mouth of the Murray.

T. similis, sp. nov. Minus elongatus ; depressus ; sat nitidus ; capite piceo vel rufopiceo, prothorace rufotestaceo antice infuscato, antennis palpis labro mandibulis pedibus elytrisque rufo-testaceis, his antice triangulariter ad latera lineatim et apicem versus confuse infuscatis, abdomine piceo ; antennis sat elongatis ; prothorace transverso canaliculato postice angustato, angulis posticis subrectis ; elytris valde depressis subquadratis ; stria suturali leviter ceteris tribus vix evidenter impressis ; stria recurva leviter arcuata. Long., $2\frac{3}{4}$ mm.

Allied to the preceding, but differing in colour and in structural characters. The lateral infuscation consists of an almost black line just before the margin, commencing about the middle of the length, and running into the apical infuscation. *T. similis* is a shorter, broader, and more depressed insect than *T. infuscatus* ; the striæ of the elytra are somewhat fainter, and with less appearance of puncturation ; the hinder angles of the thorax though obtuse are not far from being right angles ; the recurved stria is only very slightly arched. The marginal furrow of the elytra is not much different from that of *T. infuscatus*. The punctures on the elytra bearing setæ are present in this species as in the preceding.

A few specimens occurred on the margin of the "Big Swamp," about twelve miles from Port Lincoln, running with extreme rapidity.

T. Lindi, sp. nov. Sat elongatus ; convexus ; nitidus ; piceus ; palpis mandibulis antennarum basi pedibus prothorace et elytrorum maculis obscuris, testaceis vel rufescentibus ; antennis sat elongatis ; prothorace transverso, vix evidenter canaliculato, postice parum angustato, angulis posticis fere rectis ; elytris subparallelis convexis ; striis vix evidenter punctatis binis prope suturam distincte, tertiâ leviter, impressis, ceteris obsoletis ; striâ recurvâ arcuatâ, fortiter impressâ. Long., 3 mm.

The pale markings on the elytra are very cloudy and difficult to describe. They consist of an ill-defined spot occupying the anterior external portion, a spot on the disc a little before the apex, and another at the apex, but they all merge into the

darker ground colour so gradually that it is difficult to say where they end. This insect resembles the preceding in the possession of similar setiferous tubercles, but its strong convexity, thorax much less narrowed behind, strongly marked striæ on either side of the elytral suture, different colour, and larger size, make it appear almost generically distinct.

It is found about 40 miles north of Port Lincoln on damp ground.

T. Adelaidæ, sp. nov. Elongatus; sat convexus; nitidus; piceus, sub-iridescens; antennis palpis labro pedibus et elytrorum apice testaceis, prothorace rufescenti; antennis sat elongatis; prothorace canaliculato, postice parum angustato, lateribus post medium distincte sinuatis, angulis posticis subrectis; elytris subparallelis, sat convexis; striis trinis prope suturam distincte impressis, ceteris obsoletis; striâ recurvâ minus arcuatâ minus fortiter impressâ. Long., $2\frac{3}{4}$ mm.

This species has the setiferous punctures on the elytra as in the preceding species, except that the anterior one is much nearer the base. It resembles *T. Lindi* rather strongly, but differs in its iridescence, in the absence of pale markings on the elytra, except obscurely at the extreme apex; in the decided (though delicate) sinuation of the sides of the thorax close to the base, in the three striæ of the elytra being nearly of equal sculpture (though they are all fainter than those nearest to the suture in *T. Lindi)*, in the recurved stria on the elytra being less strongly impressed and less arched, and its more elongate form, which is scarcely so convex, &c.

I have taken a single specimen at Woodville, near Adelaide. It was flying in the evening.

T. uniformis, sp. nov. Elongatus; minus convexus; nitidus; rufo-piceus, palpis mandibulis antennarum basi pedibusque sordide-rufis, elytrorum suturâ plus minusve rufescenti; antennis gracilibus minus elongatis; prothorace canaliculato antice parum angustato; lateribus prope basin sat fortiter sinuatis, angulis posticis prominulis obtusis; elytris sat parallelis minus convexis; striis binis prope suturam distincte impressis, ceteris obsoletis; striâ recurvâ arcuatâ impressâ. Long., $2\frac{1}{3}$ mm.

The setiferous punctures on the elytra are not very conspicuous in this species unless the setæ are present. It bears a good deal of resemblance to the preceding, but is much smaller, and of a dark uniform colour in general appearance, the reddening of the suture being never very conspicuous, and in some examples scarcely traceable. The thorax, as in the preceding two species, is strongly transverse, and only mode-

rately narrowed behind, though pretty strongly rounded on the sides. The basal angles, though strictly speaking obtuse, have a sharp appearance, being somewhat prominent, or almost subdentiform. The antennæ are very slender, and not quite so long as in the preceding insects.

A few specimens occurred on the banks of a small creek about 35 miles north of Port Lincoln. I have also taken it near Adelaide.

T. semistriatus, sp. nov. Minus elongatus; convexus; nitidus; piceus, antennarum basi mandibulis capite prothorace pedibus et elytrorum maculâ subapicali obscurâ rufescentibus; antennis crassiusculis, capite prothoraceque conjunctis vix longioribus; prothorace minus fortiter transverso canaliculato, postice fortiter angustato, trans basin punctulato, lateribus antice fortiter rotundatis, juxta basin sinuatis, angulis posticis subdentiformibus acute rectis; elytris oblongis, antice fortiter 7-seriatim punctatis, haud striatis (striâ suturali, postice et breviter recurvâ fortiter impressâ exceptâ). Long., $2\frac{1}{3}$ mm.

I do not observe any setiferous punctures on the elytra of this insect, which does not seem to fall naturally into any genus known to me. The presence of a recurved stria (which, however, is very short) associates it with *Tachys* and *Tachyta*, and the antennæ are suggestive of the latter; but its strong convexity, the coarse serial puncturation of the elytra not extending beyond the middle of these organs; the complete absence of striation, with the exception of the very strong sutural stria commencing near where the puncturation ceases, and briefly recurved a little before the apex, are inconsistent with any close alliance with the species of those genera. In many respects, especially the form and sculpture of the thorax, *T. semistriatus* bears much resemblance to the European *Bembidium articulatum*, Gyll., from which, however, the short antennæ, well defined recurved stria, &c., separate it rather widely. It should be added that the reddish mark on the elytra consists of a large obscure spot on the disc, a little behind the middle.

A few specimens have occurred to me on swampy ground in several places near Port Lincoln.

T. Flindersi, sp. nov. Minus elongatus; sat convexus; nitidus; rufus, antennis (his basi exceptâ nonnullis exemplis testaceo-fuscis) palpis mandibulis pedibusque pallidioribus, elytrorum disco nonnullis exemplis plus minusve obscure infuscato; antennis crassiusculis, capite prothoraceque conjunctis haud longioribus; prothorace (minus fortiter) transverso, haud distincte canaliculato, postice minus for-

titer angustato, lateribus antice sat fortiter rotundatis basin juxta rectis, angulis posticis rectis; elytris oblongo-parallelis, vix striatus (striâ suturali postice et striâ recurvâ exceptis), antice minus fortiter 5-seriatim punctatis. Long. 2-2½ mm.

This is another anomalous little species. I cannot discover any trace of the large setiferous punctures on its elytra. The infuscation on the elytra when present is very obscure. I possess one example in which there is a little infuscation round the scutellum. This insect bears much resemblance to the preceding, but has fewer lines of punctures on the elytra (the punctures themselves being considerably finer), the recurved stria much longer, the elytra more parallel, and the thorax differently shaped. The basal margin of the thorax is scarcely narrower than the apical, the sides are regularly and rather strongly rounded from the front nearly to the base where they become quite straight and parallel to each other, and there is no trace of puncturation across the base.

I have found this insect in several places in the Port Lincoln district, on swampy ground, and also on the banks of the Torrens, near Adelaide.

T. captus, sp. nov. Sat elongatus; subdepressus; nitidus; lividus, capite obscuriore, pedibus (nonnulis exemplis prothorace etiam) dilutioribus; antennis crassiusculis, capite prothoraceque conjunctis paullo longioribus; prothorace sat fortiter transverso, postice evidenter angustato, subtiliter canaliculato, lateribus rotundatis ante basin vix sinuatis, angulis posticis distinctis obtusis; elytris oblongis, striâ suturali leviter ceteris obsolete notatis, striâ recurvâ nullâ; utroque elytrorum punctis setiferis 2 in disco et 4 juxta marginem notato. Long., 1½ mm.

This minute insect is no less anomalous than the preceding. I cannot find any character to separate it from *Tachys* (of which it has all the facies) except that I fail to discover any trace of a recurved stria; at the same time I must admit having failed to dissect the mouth organs satisfactorily. In colour and size it must be very like *Tachyta livida*, Bates (described from an Adelaide specimen, but quite unknown to me in nature), but the structural characters are very different. In one of my specimens there is a little infuscation about the front of the thorax.

I have taken this species in the Port Lincoln district and also near Adelaide. One of the specimens from the latter locality with the upper surface pitchy black, the elytra apparently a little less depressed, and the antennæ scarcely so long as in the type, may possibly represent a closely allied distinct species.

B. proprium, sp. nov. Nigro-piceum; nitidum; antennarum brevium apicem versus infuscatarum basi, pedibusque testaceis; elytris plus minusve testaceo maculatis; prothorace leviter transverso subtiliter canaliculato, cordato, utrinque ad angulos posticos rectos foveolato, lateribus fortiter rotundatis; elytris vix striatis, longe sparsim setosis, fortiter seriatim punctatis, punctis apicem versus obsoletis. Long., $3\frac{1}{2}$ mm.

This species bears a great resemblance to the European *B. (Leja) Normannum*, Dej., though the closeness of the basal foveæ on the thorax to the lateral margin would seem to associate it with the subgenus *Lopha*, as also the brevity and thickness of the antennæ, those organs being scarcely longer than the head and thorax together; the whole insect is a little less elongate, especially in respect of the thorax, than *B. Normannum*, and the puncturation of the elytra scarcely differs from what it is in that species, consisting of rows of strong punctures in scarcely marked striæ, which become obsolete in the posterior one-third of the elytra, the rows nearer the suture extending further than those nearer the sides. The testaceous markings of the elytra vary a good deal, in some specimens consisting merely of a blotch on the lateral margin a little before the apex, while in others the shoulders and nearly the apical half of the elytra are testaceous.

I have not met with this insect except in the Port Lincoln district, where it is not rare.

B. dubium, sp. nov. Atrum; nitidum; antennis sat elongatis palpis piceis basi dilutioribus, pedibus rufescentibus, elytris apicem versus rufo maculatis; prothorace leviter transverso subtiliter canaliculato, cordato, utrinque ad angulos posticos subrectos foveolato, lateribus fortiter rotundatis; elytris vix striatis minus fortiter seriatim punctatis, punctis apicem versus obsoletis. Long., 4-$4\frac{1}{4}$ mm.

Very closely allied to the preceding, but undoubtedly distinct. It is larger and a little more elongate and parallel, with the ground colour black, the antennæ considerably longer than the head and thorax together, of a pitchy black colour except at the extreme base, the basal angles of the thorax gently obtuse and the elytra more finely punctate, with an obscure impression on each of them near the front, and no trace of the long thinly-dispersed setæ which exist on fresh specimens of *B. proprium*. I think that this species also should be referred to *Lopha*.

I have taken this insect in the Port Lincoln district, also on the banks of the River Murray. There are specimens in the

South Australian Museum from the Finnis River, which seem to have the elytra a little more finely punctured, but do not differ otherwise.

B. errans, sp. nov. Nigro-piceum; plus minusve æneseens; sat elongatum; minus nitidum; antennis palpis pedibusque sordide testaceis; elytris plus minusve testaceo-maculatis; antennis capite prothoraceque conjunctis sat longioribus; prothorace fortius transverso, haud cordato, subtiliter canaliculato, postice quam antice vix angustiori, postice marginem juxta utrinque foveolato, lateribus fortiter rotundatis; angulis posticis minutis, subrectis; elytris leviter striatis, striis sat subtiliter puncturatis marginem apicemque versus deficientibus, interstitio tertio bi-impresso. Long., 5 mm.

This species is very difficult to place among the named subgenera of *Bembidium*. It has very much the general appearance of a *Leja* (the European *Bruxellense*, Wessmael, for instance) with a thorax much of the *Lopha* type (though not at all cordate), with the basal corners not at all explanate, and the basal fovea not separated by a keel from the lateral margin. The elytra vary a good deal in colour and marking, being in some specimens almost entirely of a dirty testaceous hue, and in others blackish, or almost green, with the shoulders and external apical portion, or even the latter only, suffused or spotted with testaceous. The sculpture of the elytra is very similar to that of *B. Bruxellense*, with the striæ a little finer and more finely punctured.

Rather a common species and widely distributed in South Australia, possibly occurring only near the coast. I have the following localities noted for it:—Adelaide, Port Lincoln, Mouth of the Murray.

B. ocellatum, sp. nov. Æneum; sat nitidum; minus elongatum; antennis (apice infuscato excepto) mandibulis pedibusque testaceis, elytris, apicem versus testaceo-maculatis; antennis capite prothoraceque conjunctis longioribus; oculis permagnis; prothorace fortiter transverso haud cordato, postice quam antice haud angustiori, subtiliter canaliculato, utrinque angulos posticos subrectos versus foveolato, margiuibus lateralibus sat fortiter rotundatis postice sat deplanatis; elytris striatis, striis subtiliter puncturatis marginem apicemque versus deficientibus, interstitio tertio bi-impresso. Long., 3½-4 mm.

This little species would not be much out of place in the subgenus *Philochthus;* compared with the European species it is not so convex, has much larger and more prominent eyes, and the thorax is proportionally larger, and especially wider. Com-

pared with *B. Mannerheimi*, Sahlb., of that group, besides the difference already named, it is more elongate and parallel, not so shining, has no keel within the posterior angles of the thorax, and the punctures in the striæ of the elytra are very much finer. The testaceous markings on the elytra consist of two somewhat crescent-shaped spots connected on the margin, the front of the anterior one being at a distance of about a quarter of the elytron from the apex, and the hinder one extending to the apex; in strongly-marked specimens the hinder is curved up the suture, and the anterior is curved almost to meet it, a dark portion being enclosed, so that the whole resembles an ocellus; in some specimens, however, these markings are very obscure indeed.

This is a common insect on the margins of fresh-water pools, rivers, &c. I have it from the Port Lincoln district, and from various places near Adelaide, but not from the interior, though probably it will be found there. Mr. Pulleine informs me that he has taken it actually under water.

STAPHYLINIDÆ.

ALEOCHARA.

A. pelagi, sp. nov. Nitida; nigra; elytris pedibusque obscure piceis; capite rotundato prothorace multo angustiore antice sub-triangulariter deplanato, confuse profunde sparsim punctato; antennis prothoracis basin haud attingentibus, articulis 5-10 fortiter transversis, 11° conico 10° plus duplo longiore; prothorace transverso antice angustato postice rotundato ad latera sparsim fortiter subseriatim punctulato, disco profunde biseriatim foveolato, spatio intermedio lato; elytris prothorace vix longioribus, parce fortiter apice marginibusque densius subtiliusque punctulatis spatio discoidale sat lato humeris lineaque subhumerali lævibus; abdominis segmentis 1-4 sublævibus, 5-7 fortius sat crebre punctulatis. Long., 4 mm.

This species is closely allied to *A. speculifera*, Er., from which it differs *inter alia* as follows:—The lateral punctures of the thorax are very much less numerous, consisting chiefly of a well-defined row near the margin, and the discal series are not placed in striæ, but consist each of about three very large foveæ, the space between the series being very wide; on the elytra the apical and marginal punctures are much less confused, and the discal puncturation is stronger and more distinct; the basal three segments of the hind body have only a few obscure punctures which are near the margins, while on the fourth segment the lateral punctures are very little more noticeable, and a narrow punctured space crosses the base.

This insect occurs rarely under decaying seaweed near Port Lincoln.

A. læta, sp. nov. Nitida; nigra; pedibus piceis, elytris et abdominis apice læte rufis; antennis elongatis, capite prothoraceque conjunctis vix brevioribus, articulis 7-10 minus fortiter transversis; capite supra late concavo, fortiter nec crebre (disco subtilius), punctulato prothorace multo angustiori; hoc transverso antice fortiter angustato, postice rotundato, ad latera crasse sat crebre punctulato, disco profunde bisulcato, sulcis confuse biseriatim punctulato, spatio intermedio angusto convexo; elytris prothorace haud longioribus, profunde nec crebre punctatis; abdominis segmentis singulis antice subtiliter postice fortiter punctatis. Long., $4\frac{1}{2}$ mm.

The puncturation of the abdomen (which is moderately close and regular, and gradually passes on each segment from fine at the base to very coarse near the apex) is a very distinctive feature of this pretty species. It seems to be somewhat like *A. bisulcata*, Redt., but its long antennæ, as well as the abdominal puncturation, clearly distinguish it.

A single specimen occurred under decaying seaweed near Port Lincoln.

A. occidentalis, sp. nov. Sat nitida; piceo-nigra; ore antennis palpis elytris et abdominis apice brunneis; antennis capiti prothoracique conjunctis subæqualibus, articulis 5-10 transversis; capite supra sat depresso, fortiter subæqualiter (disco longitudinaliter lævi excepto) punctulato prothorace, multo angustiori; hoc transverso antice fortiter angustato postice rotundato, ad latera crasse punctato, disco irregulariter profunde bisculcato, sulcis profunde punctulatis, spatio intermedio lato vix convexo; elytris sparsim pubescentibus, prothorace haud longioribus, profunde sat crebre punctulatis, abdomine confuse punctato. Long., 5 mm.

This species is closely allied to the preceding one, but I think it is really distinct. Apart from strong difference in colour, the subapical joints of the antennæ are more strongly transverse, the head is not concave (though it is much flattened), the puncturation of the head is uniformly strong, though entirely absent along a longitudinal middle line (while in *læta* it becomes much finer, but does not cease in the middle); the thoracic furrows are not continuous, but consist each of two or three elongate foveæ placed in a line, the puncturation in which is very coarse, confused, and confluent, the intermediate space is wide and flat, the puncturation of the elytra is much closer, and that of the hind body quite different, consisting of two systems, one fine regular and not very sparse, the other coarse, sparing, and on each segment not extending to the

basal quarter; both systems of punctures are somewhat crowded together, and confused near the lateral margins. Both this species and *A. læta* must be allied to *A. bisulcata*, Redt., but the "antennis thoracis mediam partem vix attingentibus" of that insect is quite irreconcilable with its being identical with either of them.

I possess a single specimen sent to me from Western Australia by E. Meyrick, Esq.

A. insignis, sp. nov. Nitida; nigra; antennis pedibusque piceis; capite prothorace elytrisque æqualiter subtiliter sparsissime punctatis; abdomine lævi; capite convexo fortiter transverso; antennarum articulis basalibus 3 elongatis, 3° 2° longiore, articulis 4-10 fortiter transversis, 11° duobus præcedentibus conjunctis æquali; prothorace duplo latiori quam longiori; elytris transversis prothorace vix longioribus. Long., $4\frac{1}{2}$ mm.

This insect is utterly unlike any other *Aleochara* known to me. Until examined with a strong lens it appears quite devoid of puncturation. The apical segments of my unique specimen are unfortunately too much damaged for accurate investigation, but, as far as I can make out, the last segment is slightly roughened, as with minute granules. The hind margin of each segment of the hind body is a little inclined to reddish.

Port Lincoln.

PHILONTHUS.

P. ornatus, sp. nov. Niger; nitidus; antennarum basi mandibulis palpis pedibusque pallidis, elytris rufis antice et postice fusco-umbratis; antennis capiti prothoracique conjunctis longitudine subaqualibus, articulis 7-10 leviter transversis; capite prothorace paullo angustiori, punctis interocularibus postocularibusque sat sparsim (ut in *P. sanguinicolli*, Fauv.) positis; prothorace tertia parte longiore quam latiore, seriebus dorsalibus (puncto ad marginem anticam excepto) 4 punctatis, punctis 3 aliis extus medio aliis que 2 parum obliquis prope angulum anticum positis, lateribus parum rotundatis subparallelis; scutello sparsius subtilius, elytris parum dense fortius, abdomine subtilius nec crebre, punctatis; elytris prothorace sat longioribus. Long., $4\frac{1}{4}$ mm.

Considerably smaller than *P. sanguinicollis*, Fauv. (which, according to my measurements, varies from $4\frac{3}{4}$ to $6\frac{3}{4}$ mm. in length); also narrower and more parallel than that insect, with the thorax differently punctured, and the elytra much more coarsely and the hind body much more sparingly punctured. The infuscation on the elytra fills up the humeral and external apical corners, the two spots being very obscurely united along

the lateral margin, and also obscurely extending along the basal and hind margins to the suture.

A single specimen is in the collection of Mr. R. H. Pulleine. It was found in South Australia.

P. ventralis, Grav. I do not think that the occurrence in Australia of this European species has been hitherto recorded. I have before me two specimens taken by Mr. Pulleine, which appear quite identical with European types.

LITHOCHARIS.

L. Lindi, sp. nov. Minus nitida; piceo-nigra, antennis pedibusque paullo dilutioribus, illis apice testaceis; corpore toto subtilissime creberrime vix rugulose punctulato; antennis gracilibus sat elongatis; capite subquadrato; prothorace hoc vix latiore, paullo longiore quam latiore; elytris prothorace sat longioribus latioribusque, longioribus quam conjunctim latioribus. Long, $4\frac{1}{3}$ mm.

In size and build this species resembles *L. ochracea*, Gr. The colour, however, is totally different, the antennæ are more slender (their length being about the same), as of those of *L. ochracea*, the thorax is considerably longer in proportion to its width, and the puncturation of the whole insect is less smooth, though scarcely less fine and dense. I have two specimens of this insect (apparently females), both taken on swampy ground near Port Lincoln.

CAFIUS.

C. occidentalis, sp. nov. Niger; elytris abdomineque plus minusve nigro-piceis, his apice dilutioribus; ore antennis pedibusque rufis vel piceo-rufis; antennis capiti prothoracique conjunctis longitudine subæqualibus sat gracilibus; capite antice medio longitudinaliter sulcato, utrinque crasse seriatim punctulato; prothorace sat elongato, disco subtilius biseriatim punctulato, spatio intermedio lato convexo, lateribus punctis sat crebris subseriatim instructis; elytris creberrime subtilissime subrugulose punctulatis, prothorace sat longioribus, parce sericeo-pubescentibus; abdomine minus opaco, alutaceo, sericeo-pubescenti. Long., $4\frac{1}{2}$-$5\frac{1}{2}$ mm.

In size, build, and colour this species is extremely like a large highly-coloured example of *C. sericeus*, Holme, from which it differs as follows:—It is slightly less opaque, the puncturation of the elytra is less smooth, and the antennæ are less stout. The head and thorax are quite different. The former is quadrate in one of my specimens, elongate in the other (apparently male and female), with a strong longitudinal furrow running down the anterior two-thirds, on

either side of which coarse punctures run in two lines, the puncturation outside these being confused. On the thorax the smooth convex discal space is very broad, and the lines of punctures on either side of it consist of about 15 fine but strong punctures, and are scarcely confused with the lateral puncturation, which is strong, moderately close, uniform, and sublinear in its distribution. Although my specimens appear to be male and female, I cannot detect any sexual characters apart from the shape of the head.

Taken by E. Meyrick, Esq., in Western Australia.

TROGOPHLÆUS.

T. paludicola, sp. nov. Elongatus; gracilis; sat nitidus; minus pubescens; piceus; antennis (basin versus) pedibus elytrisque obscure rufescentibus; antennis sat elongatis (capiti prothoracique conjunctis longitudine æqualibus) apicem versus paullo incrassatis; capite prothoraceque alutaceis; hoc subquadrato, postice leviter angustato, disco subinæquali; elytris abdomineque subtilissime confertissime punctulatis; illis prothorace multo longioribus. Long., $1\frac{3}{4}$-2 mm.

This species closely resembles the European *T. tenellus*, Er. Compared with it the colour of the elytra and legs is much darker, the head wider, and the thorax less narrowed behind and considerably less distinctly punctured, the puncturation being so fine and close that the punctures are individually scarcely distinguishable, and hence the thorax has a much duller appearance than that of *tenellus*.

A few specimens occurred at the "Big Swamp," twelve miles west of Port Lincoln.

BLEDIUS.

B. Adelaidæ, sp. nov. Robustus; sat nitidus; minus pubescens; niger; prothorace et elytris rufo-piceis, his apice antennis pedibusque rufis; antennis brevibus apicem versus fortius incrassatis; oculis magnis capitis basin attingentibus; capite prothoraceque alutaceis; hoc fortiter convexo subcirculari, postice angustato, disco obscure biimpresso; elytris subtiliter crebre, abdomine subtilissime creberrime, punctatis; illis prothorace sat longioribus. Long., $2\frac{1}{2}$-$2\frac{3}{4}$ mm.

The antennæ of this species are almost exactly like those of *B. phytosinus*, Fauv. The puncturation of its elytra very closely resembles that of the same part in *Trogophlæus corticinus*, Er., but is slightly finer and smoother. The well-marked red apical margin of the elytra is a very distinctive character.

Taken in the neighbourhood of Adelaide by Mr. R. H. Pulleine.

L. Sedani, sp. nov. Ovatus; nitidus; niger, elytris (marginibus anticis, et lateralibus post medium, infuscatis exceptis) rufis, antennis (clavâ excepta) palpis tarsisque plus minusve rufescentibus; clypeo antice rotundato-truncato reflexo et capite obsolete bituberculato confertim rugosius, prothorace late leviter canaliculato longe nigro-piloso sparsim subtiliter, elytris sparsim fortius, pygidio propygidioque longe albido-hirsutis (illo vix evidenter carinato) confuse sparsim, punctatis; striis geminatis minus evidenter impressis; tibiis anticis (? alterutrius sexus solum) obtuse bidentatis; antennis 9-articulatis; tarsorum posticorum articulo primo secundo subæquali; subtus albido-pubescens. Long., 8 mm.

Just above the upper of the two teeth on one of the anterior tibiæ in the specimen described there is a rather distinct sinuation, suggestive of a very rudimentary third tooth, which is probably a deformity, as I cannot trace it on the other front tibia. The insect is closely allied to my *nigroumbratus*, from which it differs in having a well defined and broad—though shallow—longitudinal furrow on the thorax, in having the thorax and pygidium very finely instead of coarsely sculptured, and the latter clothed with *white* pilosity. A single specimen has been presented to me by Mr. Röthe, of Sedan.

L. perplexus, sp. nov. Ovatus; minus nitidus; rufo-brunneus, capite prothorace tibiisque nigrescentibus, antennis palpisque testaceis, elytris antice subinfuscatis; clypeo antice reflexo subtruncato capite et prothorace pilis longis nigris erectis instructis crasse sat crebre punctatis, hoc pilis albidis adpressis instructo et ad latera basinque pilis longis albidis fimbriato; elytris confuse fortius sat crebre punctatis, pilis erectis (antice longis postice brevioribus) nigrescentibus instructis, striis geminatis nullis; pygidio propygidioque sat crasse punctatis, pilis albidis adpressis crebre, et pilis longissimis cinereis erectis sat sparsim, instructis; tibiis anticis (? alterutrius sexus solum) fortiter tridentatis; antennis 8-articulatis; tarsorum posticorum articulo primo secundo sat longiore; tarsis omnibus gracillimis; subtus cinereo-pilosus. Long., 7 mm.

I do not think this remarkable insect has any near ally. Probably its place in the genus should be next to *L. ferrugineus*, Blanch, in common with which it possesses eight-jointed antennæ, and a large exposed propygidium; but the remarkable erect pilosity of the elytra, very long in front and gradually decreasing in length till it is very short behind, and the double

pilosity of the pygidium and propygidium (the long hairs are nearly as long as the hind tibiæ) characterise it very strongly. The second joint of the hind tarsi is about two-thirds the length of the first.

Also presented to me by Mr. Röthe, of Sedan.

PANSCHIZUS, *gen. nov.*

Mentum subquadratum, antice sat late productum; palpis maxillaribus modicis, articulo ultimo sat magno supra excavato; labrum medio fortiter productum; clypeum transversum, reflexum, rotundatum; oculi magni sat prominuli; prothorax transversus, basi parum lobatus; scutellum triangulariter rotundatum; elytra oblonga; pedes robusti fortiter punctulati; tibiæ anticæ tridentatæ; intermediæ et posticæ bicarinatæ, tarsi tibiis breviores; unguiculi inæquales, externi apice sat fortiter divisi; mesosternum haud productum; elytra margine membranaceo instructa.

The insect for which I propose this generic name seems to be very close to some of the species included by Lacordaire in *Anoplostethus*, but differs in having the external claw of all the tarsi deeply bifid at the apex. I feel considerable doubt as to the value of this character as a generic distinction; at the same time, as *Anoplostethus* stands at present, the insect I am describing cannot rightly be attributed to it.

P. pallidus, sp. nov. Oblongus; nitidus; supra glaber; testaceus viridi-micans; antennis, palpis, mandibulis, clypeo subtus, labro et pedibus testaceis, his æneo micantibus, pygidio pallide viridi; clypeo crebre subtiliter, capite prothorace canaliculato scutelloque subtiliter minus crebre, elytris fortiter sparsim subseriatim, pygidio creberrime subtiliter, punctulatis; subtus viridis longe albo-pilosus, sterno (medio excepto) subtiliter creberrime, abdomine crasse sparsim punctulatis; pedibus fortiter punctulatis, intermediis et posticis longe albo-pilosis. Long., 32 mm.

A single specimen of this insect was sent to me from Western Australia by E. Meyrick, Esq. There is also a much broken example in the South Australian Museum, of the capture of which there is no record. I am doubtful of the sex of these specimens, but believe them both to be females. The nearest allies of *P. pallidus* are no doubt *Anoplostethus opalinus* and *roseus*, which differ entirely from it in colour as well as in the structure of the claws.

Further Notes on Australian Coleoptera, with Descriptions of New Species.

By Rev. T. Blackburn, B.A.

[Read September 6, 1887.]

In this paper I offer to the Royal Society descriptions of thirteen species of South Australian *Coleoptera* that appear to have hitherto escaped notice, together with the redescription of an insect previously insufficiently described by me, and a note on the capture by Mr. J. J. East of a species doubtless introduced through the agency of commerce, but which has not, I believe, been previously recorded as Australian. I have also furnished some remarks on the structural characters of the front tibiæ of the *Scaritidæ*, pointing out the importance in determining the limits of *genera* and *species* of one of those characters that does not appear to have been observed by describers hitherto.

SCARITIDÆ.

EUTOMA.

E. Adelaidæ, sp. nov. Angustum; parallelum; nitidum; supra nigrum, elytris splendide cæruleis, antennis palpis mandibulorum basi pedibusque plus minusve rufis; subtus nigrum, coxis abdomineque picescentibus; capite prothoraci latitudine æquali fortiter longitudinaliter utrinque sulcato, sulcis postice haud transversim productis, antice leviter convergentibus, supra frontem breviter profunde divergentibus; juxta oculos 2 punctis setiferis positis; prothorace subquadrato profunde canaliculato (canalicula marginem anticam haud attingente), intra angulos posticos transversim depresso, basi utrinque foveolato marginibus lateralibus leviter sinuatis; elytris lævibus secundum suturam depressis, postice utrinque puncto magno notatis; tibiis anticis externe fortiter bidentatis. Long., 14½ mm.

This species does not appear to resemble closely any yet described except *E. lævis*, Cast., from which it appears to differ as follows:—It is smaller, the furrows on the head end posteriorly quite abruptly without any indication of a transverse impression (in *lævis* there is stated by M. Castelnau to be a line connecting the apices of the frontal furrows with the eye), the thorax is not at all longer than wide, but when measured carefully is found to be a minute fraction of a millimetre wider than long; there is no impression on the humeral angle of the

elytra. I cannot help so far participating in the views expressed by the Hon. W. Macleay (Trans. Ent. Soc., N.S.W., 1869, II., pp. 58, &c.) touching the accuracy of Count Castelnau's observations as to feel some misgivings in distinguishing this species from his *E. lævis*, but nevertheless it is certain that if the description of *E. lævis* is accurate, the present insect is not identical with it, and if it is inaccurate a new description is required even at the risk of supplying a name that will not stand. It will be observed also that the location of this species in *Eutoma* is inconsistent with the thoracic characters attributed to that genus, but nevertheless it is certain that *E. Adelaidæ* cannot be generically separated from the species previously attributed to *Eutoma*. I should, perhaps, add that the serial marginal punctures of the elytra are placed in *E. Adelaidæ* as follows on each elytron:—Two on the external portion of the anterior margin, six on the anterior third part of the lateral margin, two close to the apex, and three at wide intervals on the intermediate portion; exterior ridge of anterior tibiæ with two teeth above the large apical ones, neither of which is visible when the tibia is viewed from perpendicularly above it; the lower one is small, and placed on the hinder declivity of the upper large tooth; the upper one is scarcely discernible except by its seta; the inferior ridge bears three small teeth.

Recently added to the South Australian Museum; taken at Ashton, near Adelaide, by Mr. Copeland.

CARENUM.

A recent study of the anterior tibia of a number of the species forming this genus has satisfied me that some of the expressions ordinarily used in describing the denticulation of that limb are wanting in accuracy, and that a thorough investigation of the matter might be of great assistance in determining the limits of closely allied species, or even in the arrangement of genera. Unfortunately the material at my command is not sufficient for such a purpose, but I am persuaded it would be well worthy the attention of some specialist in the genus who was in a position to examine a long series of species. If the anterior tibia of a *Carenum* be carefully examined it will be found that the central apical portion of the under surface consists of a flattened or concave space which terminates in a point of various shapes, the said pointed portion forming the lower portion of the cavity into which the tarsus is inserted. I shall call this the "apical plate" of the tibia. The inner edge of this plate if followed is seen to consist of a smooth ridge (*i.e.*, smooth in all the species I have examined), which passes up the tibia, encircles the upper internal spine of the tibia, and then turns downwards towards

the apical internal spine. The external edge of the "apical plate" runs backward (*i e.*, up the tibia) for a length varying with the species as a smooth ridge and then becomes serrated, each serration bearing a long seta. This ridge I shall call the "inferior ridge." From the anterior external corner of the "apical plate" there rises a line, which can be traced as a distinct rib or ridge along the following course, viz., around the whole contour of the under surface of the two large apical external spines of the tibia, and then backwards (*i.e.*, up the tibia), at first forming the external margin of the tibia and then (higher up) passing to the under side until it joins the "inferior ridge" of the tibia at a variable distance (but never very far) from the apex of the femur. The portion of this ridge above the two large apical spines, like the "inferior ridge," is cut into a series of denticulations, of which those on the part where it forms the external edge of the tibia are, if they are present at all, pointed outwards, while those on the portion that is underneath the tibia are pointed downwards. Each of the denticulations of this "exterior ridge" (as I shall call it) bears a long stiff seta.

I was led to make this exact observation of the structural characters in the front tibia of *Carenum* by experiencing the unsatisfactory nature of the expressions "bidentate" and "tridentate" as applied to the external margin of those limbs. I found, for example, that two specimens of the same insect might appear to oscillate between being "bi" or "tri" dentate in that respect, according to the position in which the anterior legs were set; and further, comparing *C. lævigatum*, Macl., and *C. Odewahni*, Cast. (placed by Mr. Macleay in different genera mainly on this character), I failed to discover any difference in the dentation of their anterior tibiæ.

As far as I have been able to examine the species of *Carenum* I find that the "exterior ridge" in them all possesses either three or four distinct denticulations in the upper portion (*i.e.*, the portion above the two large apical teeth), and that the size and position of the denticulations varies considerably, but is tolerably constant in examples of the same species. In some species they are larger than in others; in some the lowest or the lowest two are a good deal directed outwards (because the exterior ridge limits the tibia externally for a certain distance before passing to the under surface), so as to be partially visible when viewed from directly above, but in *all* that I have examined there are at least three teeth to be seen above the apical two if the tibia be viewed from a point a little outside that from which it would be looked down upon perpendicularly. Thus the distinctions founded on the dentation of the "exterior ridge" are for the most part distinctions of *degree*, and by no

means exact. I find, however, that more satisfactory results are arrived at in respect of the species I have studied by an examination of the setiferous teeth on the "inferior ridge."

I will now proceed by way of illustration to mention the characters of the external and inferior ridges in several species of *Carenum*, remarking, however, that *C. anthracinum*, Macl., and *C. lævigatum*, Macl., are the only species of which I have been able to examine a long series.

C. anthracinum, Macl.—Exterior ridge with four teeth, all feeble—the topmost extremely so; all invisible when the tibia is looked down upon quite perpendicularly. Inferior ridge bearing six or seven well-defined teeth, which commence far back from the tarsus.

C. lævigatum, Macl.—Exterior ridge with four very well-defined teeth, the lowest two of which are more or less visible when the tibia is looked down upon perpendicularly. Inferior ridge with ten well-defined teeth, which commence far back from the tarsus.

C. Odewahni, Cast.—Exterior ridge with only three distinct teeth, of which the lowest is a little visible when the tibia is looked down upon perpendicularly; a fourth is barely discoverable, but is indicated by the presence of its seta. Inferior ridge with twelve teeth, which commence close to the tarsus.

C. ineditum, Macl.—Exterior ridge very similar to that of *C. anthracinum*. Inferior ridge with nine teeth, which commence far back from the tarsus, the topmost barely traceable except by its seta.

These examples will be quite sufficient to illustrate what I conceive to be the advantage of giving more attention than has been given hitherto to an accurate study of the anterior tibia in *Carenum*, and I have not access, unfortunately, to so large a series of species as would render an exhaustive and complete study of the genus possible for me.

Before leaving the subject I will just add a few notes on the application of the characters of the anterior tibia to the distinction of the Australian genera of *Scaritidæ*.

Monocentrum is a genus of which I have no example, but probably its tibial structure is peculiar.

In *Conopterum* (two species only have been examined) the exterior ridge seems to contain two teeth and an obsolete indication of a third, while the inferior ridge commences as in *Carenum*, but contains only about three teeth, and is non-serrate in its upper half.

In *Carenidium* I have been able to examine only a single species, but it has the exterior ridge very ill-defined, and quite devoid of teeth above the apical large teeth, and six blunt obscure teeth on the inferior ridge.

In *Eutoma* the tibiæ, so far as I have been able to observe, resemble those of *Carenum*, although I have not seen any species in which the inferior ridge is so well defined as in *Carenum*, or has more than four teeth.

I do not find that the tibial characters of *Neocarenum* differ in a manner likely to be generic from those of *Conopterum*.

My very limited opportunities of examining anterior tibiæ in Mr. Macleay's new genera *Carenoscaphus* and *Calliscapterus* point to the probability that the former differs from *Carenum* in this respect only by the feebler development of the inferior ridge, and the latter by the exceedingly strong development of the same, together with the commencement of its serration nearer to the apex of the tibia.

In *Laccopterum* the "apical plate" of the tibia is not produced in the middle as in the preceding genera, and the serration of the inferior ridge does not extend above its apical half.

Teratidium is unknown to me.

The structure of the anterior tibiæ in *Euryscaphus* does not appear to distinguish that genus from *Carenum*.

In *Scaraphites* the structure of the anterior tibia differs entirely, the exterior ridge not passing to the underside of the tibia, and the inferior ridge (instead of the external edge of the apical plate) passing round the upper internal spine.

The tibial structure in *Geoscaptus* is very like that of *Carenum*, except that the apical plate is differently shaped.

In *Scolyptus* and *Clivina* the structure is so different as to be hardly capable of comparison with that of *Carenum*.

I must again remark that my observations are founded on so small a series of specimens that it is quite likely an examination of species I have not seen may considerably modify the conclusions to be arrived at, but I think my observations thoroughly establish the importance of a study of the characters I have discussed.

Another character of *Carenum* that appears to me capable of being used to advantage in the discrimination of species is to be found in the form of the elytral margin at the shoulder, which varies to some extent, but appears constant in individuals of the same species. In every *Carenum* known to me the lateral margin of the elytra is conspicuously thickened (or increased) at the humeral angle, but not always in the same way. In the majority of species there is a *mere* thickening in a vertical direction (as in *C. anthracinum*, Macl.), generally more or less pointed at the apex, and having somewhat the appearance of an ill-defined erect tooth, while in others (*e.g.*, *C. lævigatum*, Macl.) the thickened part is bent over, with its point directed more or less towards the middle of the suture, as though the shoulder of the elytron were "dog's-eared." This distinction is unques-

tionably a fine one, but in a genus so difficult as *Carenum* any tangible character is of importance.

I shall now proceed to furnish detailed descriptions of the two species of this genus that are most commonly found in South Australia, and to add descriptions of several new species that have come under my notice.

C. anthracinum, Macleay. This appears to be the most abundant and widely-distributed *Carenum* in South Australia. I have the following localities noted for it, viz., Adelaide, Mallala, Sedan, Port Lincoln, Eucla. As I have examined, and have before me, a large number of specimens, it will perhaps be interesting to South Australian collectors to possess a somewhat fuller description than the original one. A typical specimen is as follows:—Deep black, with the palpi pitchy, except at their apex, where they are yellowish, the antennæ often pitchy at the base, and more or less ferruginous in the apical part (or even wholly dull ferruginous), and the tarsi pitchy red; the lateral margins of the elytra of a violet colour (often only very faintly, sometimes not at all), which in some specimens suffuses the whole epipleuræ. Head with the frontal furrows well marked, diverging from about their middle strongly forward, and more or less gently backward, and ending posteriorly considerably in front of the level of the back of the eye. Considerably behind the termination of the furrows the head is traversed by an obscure transverse impression. The thorax at its widest part (which is about the middle) is about one-third as wide again as its greatest length (*i.e.*, as eight to six), is widely and gently emarginate in front, has the sides very gently rounded from the front to behind the middle, and then converging in a sinuate manner to the base, which is gently emarginate (not at all lobed), and a little more than half as wide as the anterior margin. It has a longitudinal channel, tolerably well marked, which does not quite reach either the apex or base, and is limited in front of the base by a somewhat arched transverse impression, this transverse impression forming the anterior boundary of a narrow flattened space which runs across the whole base of the thorax. It has a very narrow reflexed margin, generally a few quite obscure transverse wrinkles on the disc, posterior angles quite rounded off, and an extremely obscure longitudinal impression on either side near the base. The elytra are just twice the length of the thorax, and are less than half again as long as together wide, their length being to their width as eleven to eight; across their shoulders they are (compared with their greatest width) as five to eight. Their anterior margin is but little emarginate; the thickened humeral portion of the elytral margin erect but feeble, the shoulders almost rounded in outline, sides gently

arched, and reflexed margins narrow. Their surface is regularly convex, shining, and quite devoid of sculpture, except the following on each, viz.:—On the disc a large puncture near the humeral angle, and another not far from the apex; on the front margin two or three punctures placed close together; along the lateral margin a row of from 18 to 20 punctures. On the anterior tibiæ the exterior ridge has four teeth above the apical large teeth, none of which are visible from a point perpendicularly above the upper surface of the tibia, and the topmost is in many examples so minute as to require for its detection careful examination with a strong lens; the inferior ridge bears six or seven fairly sharp and strong teeth, the lowest of which is placed some distance from the apex of the tibia, being a little further off from it than is the front base of the upper of the two large apical teeth. Length, 22-25 mm.; width, 7¼-8 mm.

I have the following forms which at present must be regarded as varieties of *C. anthracinum*. Although one or two of them may very possibly prove to be distinct closely allied species, I have not yet discovered any satisfactory character on which to separate them:—

A. Much smaller than the type. Length, 17-20 mm. The front tibiæ are reddish; there are never more than six teeth on the inferior ridge of the same, and I have not been able to detect any trace of a fourth (topmost) tooth on the exterior ridge. This insect I have never seen except from Port Lincoln. It varies in colour as the type.

B. Larger than the type; measures 26½ mm. The sides of the elytra appear a little straighter, and these organs are decidedly more than twice the length of the thorax. I possess a single specimen taken in South Australia, but I know not *exactly* where. The violet bordering of its elytra is scarcely discernible.

Besides the above I have a specimen in which the anterior large puncture is exceptionally close to the shoulder on one elytron, a specimen in which it is altogether wanting on one elytron, and several in which there are faint appearances of a system of wavy longitudinal lines scratched on the elytra.

I am not able to say whether any of these last-named forms are identical with *C. cyanipenne*, Macl. Judging by the brief descriptions of that insect and *C. anthracinum*, I should think it quite possible that the form I have called var. A is what Mr. Macleay described under the name *cyanipenne*, but Mr. Macleay himself tells me it is his *anthracinum*. To confuse matters still more I have received the name *cyanipenne* from Europe for one of the large forms described above, *cyanipenne* being, according to the original description, "of less size (than *C. anthra-*

cinum and *C. ebeninum)* and more brilliancy." On the whole I am led to the conclusion, with a long series of specimens before me, that *anthracinum*, Macl., is a species which varies greatly in size and colouring, and also a little in respect of the depth and curvature of the frontal foveæ.

C. inconspicuum, sp. nov. Nitidum; sat angustum; subdepressum; nigrum; prothorace elytrisque violaceo-marginatis; capite minus transverso; sulcis longitudinalibus profundis, antice fortiter postice parum divergentibus, postice foveâ obscurâ transversâ conjunctis; antennis sat gracilibus; prothorace vix tertiâ parte latiori quam longiori, canaliculato, tenuiter marginato, basi utrinque vix evidenter impresso, antice late leviter emarginato, postice haud lobato, lateribus parum rotundatis postice fortiter angustatis, angulis posticis rotundato-obtusis, basi subtruncata; elytris dimidio longioribus quam conjunctim latioribus, prothorace paullo plus duplo longioribus nonnihil latioribus, antice minus angustatis, tenuiter marginatis, obscure seriatim punctulatis, interstitiis sparsim subtiliter punctulatis, antice posticeque bipunctatis, antice subtruncatis, humeris reflexis parum prominulis, lateribus minus rotundatis; tibiis anticis externe bidentatis.* Long., 20 mm.; lat., $6\frac{3}{4}$ mm.

This insect is of very average proportions by measurement, although the slightness of the curvature of the sides of the elytra give it a rather elongate appearance. The sculpture of the elytra, though very faint, is highly complicated, consisting of a system of fine sparing puncturation rather unevenly distributed, thinly interspersed with short transverse scratches, and traversed by about seven longitudinal rows of larger (but not deeper) punctures placed close together in the rows, and failing altogether near the base and apex. On the anterior tibiæ the exterior ridge seems to have only three teeth above the apical large teeth, although (my specimen being an abraded one) it is probable that the identification of some rudiment of a fourth tooth is prevented merely by the loss of its seta. The apex of the tooth next above the large apical ones is scarcely invisible when the tibiæ is looked at from a point perpendicularly above its upper face. The inferior ridge has seven well-defined teeth commencing well back from the apex of the tibia. The tibial structure does not seem to differ from that of

* I continue to characterise the tibiæ in the accustomed language, but it must be remembered that I mean by "bidentatæ," *having all the teeth of the exterior ridge above the apical large ones* (and by "tridentatæ" *having all but the lowest of the same*) *invisible when the tibia is viewed from a point perpendicularly above its upper surface.*

C. anthracinum, Macl., except in the lowest tooth of the exterior ridge being less concealed under the tibia. I think, on the whole, that the alliance of this insect is with *C. anthracinum*, Macl., its head and thorax, as well as its anterior tibiæ, being formed very similarly, but the thorax is less transverse, and has the posterior converging portion of its sides non-sinuate. The thickened humeral portion of the elytral margin is erect.

I have a single specimen from the neighbourhood of Fowler's Bay.

C. lævigatum, Macl. This and *C. anthracinum*, Macl., are, I feel satisfied, the only species of *Carenum* that can rightly be called common and widely distributed in South Australia, this being the less common of the two so far as I can judge, nor have I evidence of its being so widely distributed. I have it, or have seen it, from Port Lincoln, Moonta, Wallaroo, and near Adelaide, but not from the far west, though the meagreness of the collections that have come under my notice from Fowler's Bay and Eucla prevent the evidence from being more than negative. As I am not aware of its having been described more fully than in the comparatively brief original notice from the pen of Mr. Macleay, the following detailed description will not be out of place:—

The colour is scarcely different from that of *C. anthracinum*, Macl., in any respect except that there is often a little more tendency of the marginal violet tint to suffuse the anterior portion of the elytra. On the head the frontal furrows are deep and well defined, diverging from the front of the forehead strongly forward and gently (in some examples scarcely) backward, their posterior limit being quite or nearly level with the back of the eye; in many examples the foveæ are a little turned round posteriorly towards the eye. I have even one example in which the left fovea is evidently more bent than that on the right, and they are always united behind by a vague shallow arched impression that is scarcely perceptibly continued towards the sides of the head, although in some examples there are vague indications of a curved continuation of the line of the foveæ in the direction of the hind corners of the head. The thorax at its widest part (which is about the middle) is half again as wide as its greatest length (*i.e.*, as seven to four and two-thirds), is widely marginate in front with the anterior angles a little produced; the reflexed margins are moderately broad; the sides are rounded rather evenly in their anterior two-thirds, behind which they converge with a gentle sinuation to the base, which is also sinuate. There cannot be said to be posterior angles, inasmuch as the basal third of the thorax is outlined by a tri-sinuate curve, of which the middle sinuation is a little stronger than the others. The central channel of the

thorax does not very nearly touch the anterior margin, but nearly reaches the base, the flattened transverse basal space being very narrow. On either side of the central channel at the base is a fairly defined oblique elongate impression. The elytra are more than twice the length of the thorax (being as eleven to four and two-thirds), but they are not wider than it; across their shoulders they are (to their greatest width) as four and a half to seven; their front margin is very little emarginate, and their anterior declivity very little hollowed out. The thickened humeral portion of the elytral margin is very small, and is not erect, but laid back flat on the surface of the elytron; the sides are gently arched, and the reflexed margins are not particularly narrow; the surface is regularly convex, moderately shining, and quite devoid of sculpture (some examples have the faintest possible indication of wavy longitudinal lines), except the following on each, viz., on the disc a large puncture not far from the apex, a row all across the anterior declivity of about six smallish punctures, along the lateral margin a row of from eighteen to twenty punctures. On the anterior tibiæ the four teeth of the exterior ridge are all well-defined, of which the lowest is distinctly, and the next faintly discernible from a point perpendicularly above the upper face of the tibia; the inferior ridge has nine well-defined teeth commencing well back from the apex of the tibia, but scarcely behind the front base of the upper of the two large apical teeth. Length, 21-27 mm.; width, 7-9 mm.

This species does not seem to vary much except in respect of size.

C. fugitivum, sp. nov. Nitidum; violaceo-nigrum; prothorace elytrisque læte cæruleo-marginatis; capite transverso; sulcis longitudinalibus profundis, antice fortiter postice leviter divergentibus, postice fortiter collum versus curvatis, ante partem postremam lineâ curvatâ fortiter conjunctis; antennis sat robustis; prothorace dimidia parte latiori quam longiori, canaliculato, marginato, basi utrinque sat evidenter oblique impresso, antice late emarginato, lateribus antice leviter rotundatis postice sinuatis basi sat fortiter sinuatis, angulis posticis vix perspicuis; elytris vix dimidio longioribus quam conjunctim latioribus, prothorace paullo plus duplo longioribus nonnihil latioribus, antice minus angustatis subtruncatis, marginatis, postice bipunctatis, humeris subrotundatis, lateribus sat fortiter arcuatis; tibiis anticis externe bidentatis. Long., 20 mm.; lat., 7½ mm.

This species is allied to *C. lævigatum*, Macl. It differs in colour, the thorax and elytra having a bright blue border and

the whole surface of the latter being more or less violaceous, very brightly so along the front. The frontal canals are very distinct, also, from those of any specimen of *C. lævigatum* that I have seen; from the front of the forehead they diverge forward very strongly (as usual in *Carenum*), and backward only moderately at first; they are very deep and run back pretty evenly to about the level of the back of the eye, and there they curve outward and run obliquely for a short distance towards the sides of the neck with scarcely any diminution of depth, finally merging into a shallow ill-defined depression which fades away before reaching the margin; just at the point where they begin to curve outward they are connected, not by a vague depression, but by a clearly cut fine arched line. The thorax differs very little from that of *lævigatum* except that the base is less strongly sinuate, but the proportion of the thorax and elytra is different, the former being distinctly narrower than the latter (as seven to seven three-quarters) whereas in all the *lævigatum* I have measured there is no difference between those parts in width. The thickened part of the humeral margin of the elytra is turned over exactly as in *lævigatum*, but is smaller, otherwise the margins are very similar; on the anterior tibiæ the lowest tooth in the exterior ridge above the apical large ones is less visible from a point perpendicular to the upper surface of the tibia than in *lævigatum*, and the topmost tooth is less defined, while the inferior ridge has only seven teeth, which commence at about the same place as in *lævigatum*. I took a single specimen of this insect at Wallaroo.

C. rugatum, sp. nov. Nitidum; subelongatum; subdepressum; nigrum; prothorace elytrisque violaceo marginatis; capite sat transverso, sulcis longitudinalibus profundis antice posticeque divergentibus postice fovea obscura transversa conjunctis; antennis gracilibus; prothorace dimidio latiore quam longiore, canaliculato, marginato, basi obsolete biimpresso, antice late emarginato, postice lobato, lateribus rotundatis, angulis posticis vix evidenter notatis; elytris ovalibus prothorace parum latioribus, subparallelis, antice parum angustatis, marginatis, striis undulatis tenuiter notatis, postice bipunctatis, humeris reflexis subacutis; tibiis anticis externe tridentatis. Long., 22 mm.; lat., 7 mm.

A well-marked species. Its elongate elytra (half again as long as together wide), somewhat concave dorsally, point to the probability of its being allied to *C. subplanatum*, Bates, which, however, has bidentate anterior tibiæ and unsculptured elytra. The frontal foveæ are well defined, and diverge

gently backward and very strongly forward from the front of the forehead. The width of the thorax is to the length as seven to four and a half, and its posterior angles, though very little marked, are not quite rounded off. The surface of the elytra is slightly dulled by an excessively fine system of puncturation, which becomes visible under a strong lens, and it is traversed longitudinally by a series of about half a dozen fine wavy scratches or wrinkles; there are also some short transverse wrinkles, especially about the middle of the disc; the length of the elytra is considerably more than twice that of the thorax, and the thickened humeral portion is erect; on the anterior tibiæ the exterior ridge has (above the apical two large teeth) four smaller ones, of which the lowest is entirely visible when the tibiæ is looked at from perpendicularly above its upper surface, and the topmost is more strongly marked than is usual in the genus; on the inferior ridge there are nine strong teeth, which commence so close to the front of the apical plate that the anterior projection of the plate appears to be merely one of the series of teeth, which thus seem to number ten.

I possess a single specimen; it is from Fowler's Bay.

C. cupreo-marginatum, sp. nov. Nitidum; læve; nigrum; elytris obscure cupreo-marginatis; capite sat transverso, sulcis longitudinalibus parallelis antice vix evidenter impressis; antennis gracilibus; prothorace fere duplo latiore quam longiore, marginato, canaliculato, basi leviter biimpresso, pone medium quam antice latiori, antice late emarginato, postice sat anguste lobato, angulis posticis rotundatis; elytris ovatis, prothorace angustioribus, antice paulo angustatis vix excavatis, marginatis, obsolete subtiliter seriatim punctulatis, punctis 2 subapicalibus majoribus instructis, humeris reflexis vix prominulis; tibiis anticis tridentatis; subtus nigrum. Long., 22 mm.; lat., 8½ mm.

This is another very distinct species, which Mr. Macleay would probably place in his new genus *Calliscapterus*, although the width of the elytra in front give it a facies very different from that of *C. Odewahni*, Cast., &c. Its colour is peculiar, the black of the upper surface having a slight coppery tone (which becomes quite well defined in the rather broad marginal furrows of the elytra, much less on the thoracic margins) very different from the genuine black of the underside. The frontal furrows commence a little in front of the level of the back of the eye, and run forward parallel to each other to about the usual distance from the labrum, but the portion diverging apically is very faint. A faintly-impressed transverse groove runs completely across the back of the head. The width of the thorax is very

nearly twice the length (being as eight and a half to four and a half), and the greatest width is very near the base. The basal lobe of the thorax is rather narrow, very short, and slightly raised up and emarginate in the middle. The elytra are just a hair's breadth narrower at their widest part than the thorax. There are about seven rows of very fine and faint punctures on each elytron, and the sub-apical larger puncture on each is of only moderate size. The thickened humeral portion of the elytral margin is erect, and very abrupt. There are about seven punctures placed confusedly on the anterior margin of each elytron, and each lateral marginal row contains about twenty-two punctures, which, however, become faint and difficult to count near the apex. The exterior ridge of the anterior tibiæ has four teeth above the apical two large ones, of which the lowest is distinctly, and the next scarcely visible when the tibia is viewed from a point perpendicular to the upper surface of the tibia. while the topmost is hardly discoverable except by its seta; the inferior ridge has nine teeth, commencing some distance back from the apex of the tibia.

I have a single specimen in my collection. It was taken at Fowler's Bay.

C. Macleayi, sp. nov. Nitidum; læve; nigrum; pedibus piceis antennis palpisque ferrugineis, prothorace virid-marginato, elytris violaceo et viridi micantibus, splendide viridi marginatis; capite fortiter transverso, sulcis longitudinalibus profunde impressis haud curvatis postice anticeque divergentibus, antennis gracilibus sat elongatis; prothorace dimidio latiore quam longiore, sat anguste marginato, canaliculato, basi biimpresso antice subtruncato, postice late sublobato, angulis posticis obtusis subreflexis; elytris ovatis antice paulo angustatis, sat late marginatis, antice medio subexcavatis, secundum suturam depressis obsolete seriatim foveolatis (? exemplo deformato), antice et disco lævibus, marginibus lateralibus seriatim punctulatis, humeris reflexis parum prominulis; *tibiis anticis tridentatis; subtus nigrum, elytrorum epipleuris splendide micantibus. Long., 17 mm.; lat., 6 mm.

This is an extremely distinct species. In different lights the elytra display all shades of blue, violet, and green. The absence of large discal elytral punctures in conjunction with the visibility of three external spines on the front tibiæ seems to distinguish it from all other species of the genus. It seems to occupy an in-

*On the right tibia of the specimen described one of the teeth in the inferior ridge is bifid, so that there appear to be ten teeth, but the accidental character of this formation is evident, as the additional pseudo-tooth bears no seta.

termediate position between *Carenum* and Mr. Macleay's new genus *Calliscapterus*. The following are strongly marked characters in this insect, viz., the very transverse head and slender antennæ, the narrow lateral margin of the thorax suddenly dilated and turned upwards at the hind angles, the peculiar basal area of the elytra, the middle portion only of which is abruptly declivous and quite devoid of puncturation, and the remarkable series of rather large faintly-impressed pits along either side of the suture, which, however, may possibly be a deformity, more particularly as they are more strongly defined on the right than on the left elytron. On the anterior tibiæ the external ridge has four teeth above the apical two large ones, of which the lowest is visible when the tibia is viewed from a point perpendicular to its upper surface, the topmost tooth being a mere indentation scarcely noticeable but by its seta; the inferior ridge bears eight blunt teeth, commencing well back from the tarsus. The thickened humeral portion of the elytral margin is erect.

I think this species must resemble *C. politum*, Westw., which, however, would seem to be a broader insect with only two visible external teeth on the front tibiæ, and the elytra differently coloured.

I found a single specimen under a log of wood at Wallaroo in September, 1886.

DYTISCIDÆ.

HYDROCANTHUS.

H. Waterhousei, sp. nov. Oblongo-ovalis, posterius acuminatus, transversim sat convexus, minus latus, nitidus, testaceo-rufus, elytris antice seriatim obscure, postice fortius confuse, punctulatis; prosterni pectorisque medio et coxarum laminis fortius minus crebre punctulatis. Long., 6 mm.

This species is entirely different in colour from *H. Australasiæ*, Wehncke (the only Australian *Hydrocanthus* hitherto described), and seems also to differ considerably in respect of its puncturation. Each elytron has about four rows of lightly impressed small punctures commencing close to the base and extending about three quarters the distance to the apex. These rows contain about 24 punctures each, which are placed at irregular intervals, three or four being close together and followed by a space in which the rows seem interrupted, then a few more punctures, and so on. The apical quarter of the elytra is occupied by some sparing confused puncturation of a rather coarser character. In addition to the above a strong Coddington lens reveals a much finer system of punctures spread tolerably evenly over the surface. The coarser puncturation of the apical area extends a little forward on the

elytra along the sutural and marginal portions. In order to define the nature of the puncturation of this insect it may be noted that its largest and coarsest punctures are very similar to the finest of the punctures (occurring near the base) on the elytra of the widely distributed European *Noterus clavicornis*, De Geer. The eighth joint of the antennæ is considerably dilated. The condition of the specimen before me, apparently a male, does not allow of a satisfactory examination of the tarsi.

A single specimen, from the collection of Mr. F. Waterhouse, is in the South Australian Museum.

STAPHYLINIDÆ.

QUEDIUS.

Q. ferox, sp. nov. Niger; nitidus; antennis palpisque piceis, tarsis piceo-rufis, elytris subæneis; antennarum articulo 3° 4° paullo longiore, 4-10 subæqualibus minus elongatis; capite fortiter transverso (dimidiâ parte latiori quam longiori), utrinque punctis 3 (2 in margine ipso oculi), 2 aliis utrinque basi, aliis prope angulos posticos subtilissimis, notato; prothorace capite quarta parte latiori, quarta parte latiori quam longiori, tertia parte disci antica punctis 2 sat approximatis notato, antice minus angustato, marginibus seriatim punctulatis; elytris prothorace fere tertia parte longioribus, quarta parte latioribus, cum scutello fortius sat crebre punctulatis; abdomine squamose nec crebre punctulato. Long, $6\frac{3}{4}$ mm.

This is a very distinct species of *Quedius*. Its excessively transverse head, which is a good deal narrowed behind, long antennæ, in which none of the joints are distinctly transverse, and rather strongly closely punctured elytra form a combination of characters that differentiate it from all its congeners of similar size and colour.

I have a single specimen taken near Adelaide in flood refuse.

LATHROBIUM.

L. exiguum, sp. nov. Sat nitidum; piceum; antennis (basi pallida excepta), palpis, mandibulis, pedibusque sordide testaceis; capite a basi ad oculos parum angustato, basi truncato, sparsim fortiter (disco lævi excepto) punctulato; prothorace capite vix angustiori, tertiâ parte longiori quam latiori, capite vix subtilius disco lineatim a lateribus confuse punctulato, lateribus subparallelis; elytris prothorace fere dimidia parte longioribus, subtilius lineatim punctulatis; abdomine subtilissime crebre punctulato. Long., 3-$3\frac{1}{4}$ mm.

Maris segmento ventrali 6° depresso tuberculo basali instructo, segmento 7° apice breviter arcuatim inciso.

The smallest species of the genus known to me. A few specimens have occurred in flood refuse near the Grange.

CRYPTOBIUM.

The recent acquisition of a number of specimens belonging to this genus from various parts of South Australia has enabled me to arrive at a satisfactory conclusion concerning one or two species that I have not hitherto felt justified in dealing with, and has revealed errors into which I had fallen concerning two species. In a paper entitled "Descriptions of Twenty New Species of South Australian Coleoptera," which I read before the Royal Society last December, I described a new species of the genus under the name *C. delicatulum*, and the examination of more specimens has satisfied me that at that time I confused two closely allied species under the name. I was in error also in my supposed identification of *C. fractum*, Fauv., which I alluded to in my remarks on *C. delicatulum;* the insect I took for that species, of which I had not seen the female, being distinct from it. The last-named error does not materially affect the correctness of what I wrote, but inasmuch as I incorporated into my description of *C. delicatulum* the mention of a variability in colour and sculpture, which was really founded on another insect, I think that it will be well in this present paper to re-describe it.

It is worthy of note that, so far as I have observed, the Australian species attributed to this genus differ structurally from the European *C. fracticorne*, Payk., inasmuch as the lateral declivous portion of the elytra is larger, is more turned under the body, and has its margin sinuate, while the metathoracic episterna are distinctly visible along their whole length.

Besides *C. delicatulum* there have been described up to the present time four Australian species of *Cryptobium*, two of which are much larger species than any that I have seen from South Australia. Of the remaining two, *C. apicale*, Macl., is distinguished (from all those I am about to describe) *inter alia* by its colour, the elytra being red, with the base black, and the sixth segment of the hind body being red. *C. fractum*, Fauv. (from Melbourne), was unfortunately described from a female only, the antennæ of which were broken off, so that it is impossible to feel very certain regarding it; but it would seem to resemble in colour my *C. varicorne*, differing, however, from the female of that insect in several particulars, especially in the sparing puncturation of its head.

As the following species are all closely allied *inter se* the following table may be useful to assist in their identification:—

1. Antennæ unicolorous, pallid 2
   Antennæ pitchy, with the base and apex testaceous.
   C. varicorne.

2. Prothorax gently narrowed from the apex to the base ... 3
   Sides of prothorax parallel ... *C. Adelaidæ.*
3. Second and third joints of antennæ scarcely differing in length; joints, six to ten, scarcely longer than wide. *C. delicatulum.*
4. Third joint of antennæ evidently longer than second; joints, six to ten, longer than wide ... *C. elegans.*

C. varicorne, sp. nov. (mas.) Nitidum; sat robustum; nigrum; palpis, mandibulis, elytris (præter basin infuscatam) nonnullis exemplis, et antennarum basi apiceque rufis; pedibus (tibiis infuscatis exceptis) testaceis; antennarum articulo 1° maxime elongato, ceteris multo minoribus, 2° et 3° subæqualibus, 5°-10° haud longioribus quam latoribus; capite subquadrato, subæqualiter (disco lævi excepto) sparsim sat fortiter punctulato, fronte vix depressa; prothorace subcylindrico, tertiâ parte longiori quam latiori, capite quintâ parte angustiori, subseriatim punctulato, spatio medio longitudinali lato alteroque utrinque angustiori lævibus; elytris prothoraci longitudine æqualibus, capite vix latioribus, crasse nec profunde nec crebre subseriatim punctulatis; abdomine subtiliter nec crebre punctulato, segmentis apicalibus 2 (nonnullis exemplis) apice piceolis; segmento ventrali penultimo postice medio fortiter depresso, spatio depresso lævi postice emarginato antice tuberculo instructo segmento ventrali ultimo longitudinaliter depresso, postice profunde triangulariter inciso. Long., 7-7½ mm.

Fem. capite postice confluenter rugoso-punctulato, abdomine supra crassius (quam maris) punctulato, segmentis ventralibus simplicibus.

I do not think that the mutilated specimen on which M. Fauvel founded his *C. fractum* can be identical with the above insect, although it is probably allied to it. The following appear to be points of difference:—*Fractum* has the third joint of the antennæ very evidently longer than the second, the thorax evenly punctured outside the smooth discal space, the elytra longer than the thorax and wider than the head, while in *varicorne* the second and third joints of the antennæ scarcely differ from each other in length, the puncturation of the thorax runs in tolerably regular lines separated by smooth spaces, and the elytra are (by measurement under a lens) equal in width to the head and in length to the thorax. Supposing the single female specimen in my possession to be not abnormally punctured (which it is just possible it may be), the puncturation of its head is totally different from that of *fractum*.

I have taken this species at Port Lincoln.

C. Adelaidæ, sp. nov. Minus robustum; nitidum; nigrum; antennis, palpis, mandibulis et pedibus (tibiis infuscatis exceptis) testaceis; antennarum articulo 1° maxime elongato, ceteris multo minoribus, 2° et 3° subæqualibus, 6°-10° haud longioribus quam latioribus; capite longiore quam latiore, sat æqualiter (disco lævi excepto) sparsim fortiter punctulato, fronte vix depressa; prothorace subcylindrico, plus tertiâ parte longiore quam latiore, capite parum angustiori, subseriatim punctulato, spatio medio longitudinali lato alteroque utrinque angustiori lævibus; elytris prothorace paullo brevioribus, capiti latitudine æqualibus, disco crasse subseriatim lateribus subtiliter confuse punctulatis; abdomine subtiliter nec crebre punctulato, segmentis apicalibus 2 apice piceolis. Long., $4\frac{3}{4}$ mm.

Mas. latet.

The distinctive characters of this small species lie in its antennæ, with its second and third joints not or scarcely differing in length, while the five joints preceding the apical one are transverse or nearly so, in its parallel-sided thorax, and elytra a little shorter than the thorax. I think its nearest ally is *C. varicorne*, which it resembles in being of more robust build than the species that follow, though it differs widely in respect of size and colour, and has shorter elytra.

I possess a single specimen (a female), which was taken in the neighbourhood of Adelaide.

C. delicatulum, mihi. Sat angustum; nitidum; nigrum; antennis, palpis, mandibulis, pedibusque testaceis; antennarum articulo 1° sat elongato, ceteris multo minoribus, 2° et 3° subæqualibus, 7-10 vix longioribus quam latioribus; capite longiori quam latiori sat æqualiter sparsim fortiter punctulato; prothorace fere duplo longiore quam latiore, postice angustato, capite angustiori, subtiliter subseriatim punctulato, spatio medio longitudinali lato alteroque utrinque angustiori lævibus; elytris capiti latitudine prothoraci vix longitudine æqualibus, disco crasse obsolete lateribus vix evidenter punctulatis; abdomine obsolete nec crebre punctulatis, segmentis apicalibus 2 apice piceolis. Long., $5\frac{1}{4}$ mm.

Mas. latet.

This species is closely allied to *C. Adelaidæ*, with which until lately I confused it. Its facies is narrower and more slender, its thorax distinctly longer in proportion to the width, and evidently narrowed backwards from the front to the base; the disc of the elytra is much more faintly (though scarcely less coarsely) punctured, and the punctures do not run in traceable

rows; also the punctures on the thorax are finer, and the head is more elongate and depressed, without any defined puncture-less space (in *C. Adelaidæ* a distinct though small central space is devoid of puncturation). The elytra by measurement are scarcely so long as the thorax. [It should be noted that (owing no doubt to their greater width) they appear to the eye considerably shorter in proportion than they really are.] An unfortunate accident caused the destruction of the male specimen alluded to in my former description, and I know not to which species it appertained.

Port Lincoln.

C. elegans, sp. nov. Gracile; nitidum; capite prothorace et elytris (nonnullis exemplis) plus minusve piceis vel rufo-piceis, antennis palpis mandibulis pedibusque testaceis antennarum articulo 1° maxime elongato, ceteris multo minoribus (tamen sat longioribus quamlatioribus), 3° 2° evidenter longiori, capite minus elongato, sat æqualiter (disco fere lævi excepto) sparsim sat fortiter punctulato; prothorace tertiâ parte longiore quam latiore, postice angustato, capite minus angustiori, disco seriatim lateribus confuse punctulatis, spatio medio longitudinali lato alteroque utrinque angustiori lævibus; elytris capite sat latioribus prothorace sat longioribus, crasse leviter sat crebre vix seriatim punctulatis; abdomine obsolete sat crebre punctulato, segmentis 6-7 piceolis. Long., 6¼-7 mm.

Maris segmento apicali subtus late profunde inciso.

This species is very probably allied to *C. fractum*, Fauv., which it resembles in having the third joint of the antennæ longer than the second, but besides difference in colour (the tibiæ and palpi are quite clear testaceous) it has the sub-apical joints of the antennæ exceptionally elongate, and I do not think so keen an observer as M. Fauvel could have failed to notice the evident contraction backwards of the thorax, of which there is no mention in the description of *C. fractum*.

The colour of the head, thorax, and elytra vary considerably; in the darkest specimen I have seen the head and elytra are nearly black, and the thorax is of a pitchy colour; in the lightest all these segments are dull pitchy red with the suture still paler.

The apical ventral segment of the male is very deeply incised, the sides of the incision nearly parallel and meeting behind not in an angle but in a gentle curve.

I have taken this insect several times near Port Lincoln, and I also possess a specimen of which I have no record of capture, but I think it was taken in the Adelaide district.

SCOPÆUS.

S. latebricola, sp. nov. Sublinearis; minus depressus; pube subtili sericans; subtilissime punctulatus; piceus; antennis (basi apiceque pallidis exceptis) piceo-testaceis; palpis (apice piceo excepto) pedibusque testaceis; capite subquadrato longiore quam latiore; prothorace longiori quam latiori, capite angustiori, postice minus angustato, lateribus minus rotundatis; elytris capite vix latioribus, prothorace paullo longioribus; antennarum articulo 1° 2° et 3° conjunctis longitudine æquali, ceteris subæqualibus. Long., vix. 3 mm.

Mas. latet.

As I have only a single specimen of this small insect, it has not been practicable to examine the organs of the mouth satisfactorily, but it has all the facies of *Scopæus*, except that the hind margin of the elytra is not straight, but, taking the two elytra together, is gently emarginate. It differs from *S. ruficollis*, Fauv., *inter alia* in the colour of the thorax, and from *S. digitalis*, Fauv., in the colour of the antennæ and tibiæ, and in the sub-apical joints of the antennæ not being transverse, &c.

A single specimen occurred in flood refuse near the Grange.

TENEBRIONIDÆ.

ALPHITOBIUS.

A. Mauritanicus, Luc. I have not met with any record of the occurrence of this insect in Australia. I have a specimen of it, however, which was taken by Mr. J. J. East at Prospect. There can be little doubt that, like its congener, *A. diaperinus*, Panz., (which is recorded as Australian by Mr. Masters, of Sydney, and a South Australian specimen of which has been submitted to me lately by Mr. Rothe), this species has been introduced with merchandise into the colony.

Notes on the Colouring Matter of Drosera Whittakeri.

By Edward H. Rennie, M.A., D.Sc.

[Read February 1, 1887.]

The little carnivorous plant known by the name *Drosera Whittakeri* grows plentifully on the hills in the neighbourhood of Adelaide. At the termination of the underground stem, some three or four inches long, is found a tuber which contains a considerable quantity of red colouring matter. My attention was first called to it by Professor Tate, who informed me that Mr. G. Francis had partially examined the red substance. The latter gentleman was good enough to show me the specimen he had prepared, and also some pieces of silk which he had dyed by means of it, but he did not carry out a complete investigation. As the matter seemed to me of some interest from a chemical point of view, I collected a quantity of the tubers with a view of examining the colouring matter more closely.

An examination of the tubers shows that they all consist of a soft nucleus full of a reddish juice, surrounded by a series of more or less dried layers. Between these layers is collected a red substance, which appears in irregular patches.

The tubers were crushed as a whole and treated with strong rectified spirit till the latter extracted no more colour. The spirit was then almost entirely distilled off and the residue mixed with a little water and allowed to stand for a few hours. A deep red solution remained, but by far the greater part of the red matter was found as a granular sediment at the bottom of the liquid. This was filtered off and dried.

A preliminary experiment having shown that it was volatile, it was sublimed, the subliming apparatus consisting simply of an ordinary saucepan, with a shallow iron dish for lid, a large glass funnel (the neck closed with a cork) being inverted over the latter. In this manner a crystalline mass was obtained of a brilliant scarlet colour, which, on close examination, appeared to consist of at least two substances, for on dissolving a little in ether and evaporating a few drops on a slide, the residue was seen under the microscope to consist of two kinds of crystals, some yellower and longer than the others.

A few trials soon showed that one of these substances is much more soluble in glacial acetic acid, and indeed in most solvents, than the other. By repeated crystallization from

glacial acetic acid, therefore, a substance was obtained apparently pure and homogeneous, the more soluble matter remaining in the mother liquor. The red colouring matter thus obtained crystallises in small scarlet plates, magnificently brilliant in sunlight. It melts at about 192°-193° C., is soluble in boiling alcohol and glacial acetic acid, but sparingly soluble in the cold liquids, and almost completely precipitated by water. It dissolves in solutions of the caustic alkalies, forming a deep violet-red solution, but is immediately precipitated from these solutions by acids. Analysis shows it to possess the formula $C_{11}H_8O_5$, and its chemical characteristics point to its bearing a somewhat similar relation to the hydrocarbon *methyl-naphthalene*, as purpurin does to anthracene—in fact, it resembles purpurin in some respects. On oxidation it yields acetic acid and carbonic anhydride, and is probably a *methyl-trihydroxy-naphthaquinone*. On reduction with a strong solution of stannous chloride it yields a pale yellow crystalline substance containing two atoms more hydrogen than the original.

The second substance can be obtained from the mother liquors by first precipitating with water, and then submitting the precipitate to special treatment with strong (not glacial) acetic acid. The quantity obtained was small, and not sufficient to make sure of its purity; but it crystallises quite differently from its fellow, is much more soluble in all solvents tried, and gives a *red* solution with caustic alkalies, without any tinge of violet. Its melting point is nearly 30° lower—about 165°. Its analysis points to the formula $C_{11}H_8O_4$; that is, it contains an atom less oxygen than the substance first described, but is closely related to it.

I hope to obtain a further supply of material next spring, and to further investigate these interesting substances.

Caroona Hill (Lake Gilles).

By W. L. Cleland, M.B., Edin.

[Read June 7, 1887.]

Locality.—Caroona Hill is the southern extremity of a range about seven miles in length running a little west of north. It is forty-five miles due west of Port Augusta, and twelve miles east of the head of Lake Gilles.

There are two points of interest in connection with the locality—(1) The existence of polished rock-surfaces on the highest elevations of Caroona Hill; (2) The scanty but definite distribution of the subterranean water fit for consumption.

Geological Surroundings.—To the eastward an undulating plain of Tertiary age (H. Y. L. Brown, Report, June, 1885) extends for twenty-four miles to the nearest hill of the "Lincoln Gap" formation. To the westward a similar plain extends for upwards of seven miles to various outcrops of granite. The plains are formed of a decomposed granite mixed with sand and quartz and ironstone pebbles, the whole strongly impregnated with gypsum.

To the southward is a range composed of red hæmatite and manganese ore, stretching away towards Mount Middleback, distant some thirty miles. The northern extremity of this range presents a remarkable appearance, and is known as the "Iron Knob." The rocks are in rectangular blocks of many tons in weight, and piled confusedly upon one another. In size and shape they bear a forcible resemblance to the blocks of stone of which the pyramids near Cairo, in Egypt, are built. The structure of the ore is crystalline, and presents a steel-like fracture.

To the northward are hills of quartzitic porphyrite and granite, reaching as far as the Gawler Ranges.

Physical Features of Caroona Hill Range.—The western side rises abruptly and almost perpendicularly from the plain to a height of from four to five hundred feet. It consists of a red sandstone, with well-marked stratification. The dip of the strata is 30 deg. and eastward. The strike is also well-defined, running almost due north and south, the range trending in the same direction.

Abutting unconformably against this sandstone on the

eastern side is a thick deposit of conglomerate. This conglomerate is composed of water-worn pebbles of a more or less subangular form, and range in size from half an inch to eight inches in diameter. According to Mr. H. Y. L. Brown (Report June, 1885), the constituents are chiefly "quartzite, jasper, flint, chert, quartz, iron ore, grit, and sand, cemented with silicious matter."

This conglomerate forms the eastern portion or side of the range, and, compared with the abrupt western side, it may be described as sloping gradually to the level of the plain. A section of this conglomerate, 500 feet high, forming the southern end of the range, shows no appearance of stratification. The face of this cliff is studded with shallow cavernous depressions formed by the breaking off of huge masses of the conglomerate, which now form a long slope.

The conglomerate forms the highest point of the Caroona Hill, and is the site of a trigonometrical station, estimated to be 1,200 feet above sea-level. This elevated portion forms a ridge extending northwards, on either shoulder of which distinct patches of polished conglomerate may be traced for upwards of two miles.

As wells have been dug in close proximity to both sides of the range and to its southern extremity, some additional information has been obtained as to the nature of the rocks below the surface. The stratum on the western and eastern sides was, after passing through the alluvium, a hard sandstone grit; and this notwithstanding that on the eastern side the deposit of the conglomerate was within a few hundred yards. On the southern side, however, the sinking was entirely in the conglomerate, which was not pierced through at a depth of 60 feet, thus showing that at a former period the cliff had extended further to the southward, but was gradually becoming weathered back northwards. On the north-west corner of the range a well was sunk to a depth of 120 feet, and bottomed on limestone and a very hard quartzitic porphyrite, containing distinct crystals of feldspar. On the eastern plain, between the Caroona Hill Range and the "Lincoln Gap" hills, two wells have been sunk through the alluvium, and both bottomed on a blue clay-slate. The situation of one was six miles from Caroona Hill; that of the other 22 miles. It is noteworthy that no sandstone was met with in either.

Mr. Brown, in his report (1885) refers to the existence of a valley or basin between Port Augusta and the nearest "Lincoln Gap" hills, now filled with Tertiary material; and he hints at underlying "Cretaceous" rocks. He also speaks of a similar valley or basin on the western side of the "Lincoln Gap" hills.

There seems then to be evidence of the existence at one time

of a chain of granite and other igneous rocks running in a north-westerly direction from the extremity of Eyre Peninsula to the Gawler Ranges; also of another chain of Palæozoic rocks—the present Flinders Range—running nearly parallel to the eastward. Between the two is the "Lincoln Gap" formation, resting probably on a Palæozoic blue clay-slate. If this "Lincoln Gap" formation at one time extended between the two ranges, it would have formed an effectual barrier to dam back the waters to the north, and thus convert the present Lakes Gairdner, Torrens, and Eyre into one continuous shallow sea of several hundred feet deep. It would also have sufficed to submerge the beds of fossil leaves found at Mount Eba to the west and Bottle Hill to the east. In such a case Caroona Hill Range most probably formed a portion of the western margin of the "Lincoln Gap" formation. The presence of the thick deposit of conglomerate suggests that at that time the natural outlet for the waters was at this point, the sub-angular character of the pebbles forming the conglomerate, pointing rather to a fluviatile than to a littoral origin. Subsequently to this there was probably the upheaval of the land during the Pliocene period, to which Prof. Tate refers in his Presidential Address (1879), when the land was elevated into "regions of perpetual snow." If on the subsequent subsidence of the southern boundaries of the continent this took place unequally, as might very possibly be the case in the proximity of the igneous formation of the Gawler Ranges, the sandstones abutting against it would become tilted; and the ancient river, being thrown more to the eastward, would find an outlet in the valleys referred to by Mr. Brown. The ancient river-bed at Caroona Hill would then for a longer period form possibly an outlet for some glacier from the adjoining granite mountains. This theory would also account for this particular remnant of the Caroona Hill Range being higher than the "Lincoln Gap" hills to the east.

The absence of organic remains in the "Lincoln Gap" formation makes it difficult to determine its geological age, which at present can only be inferred. Considering the proximity of the Palæozoic clay-slate of the Flinders Range to the eastward, and the occurrence of a clay-slate in the two wells sunk on the plain to the westward, an inference might be drawn that this clay-slate forms the bed-rock of the "Lincoln Gap" sandstone. If this be correct it would make this sandstone somewhat analogous in position to the sandstone capping of Mount Brown. It would also make it probably different in geological age to the "desert sandstone" to the north, which is underlain by a formation proved to be of Mesozoic age.

Polished Surfaces.—These are limited to the conglomerate

forming the top of Caroona Hill, and are consequently at an elevation above sea-level of from ten to twelve hundred feet. The polishing is not confined to any particular constituent of the conglomerate, but passes indifferently and uniformly through matrix and pebble, leaving a smooth and glistening surface. The exposed faces of many of the embedded pebbles have evidently been ground flat, whilst the portions fixed in the silicious cement have retained their original water-worn rounded form.

Where flaws or joints occur in this polished conglomerate they do not correspond with the direction of the smooth surfaces, but are generally at a considerable angle to them. Lying as these surfaces do, exposed to the fierce alternations of heat and cold, and scarcely at all protected by any debris, it is a matter of surprise that they do not present a more weathered aspect. Many of the surfaces have a somewhat convex face, and are square yards in extent, and can be easily traced for upwards of two miles. The long diameter of the patches is invariably in the direction of the range—that is north and south. No striæ or scratches were discovered by me, but this might be due to the hardness of the material.

Water Supply.—This in the neighbourhood of Caroona Hill seems to be of a purely local nature, and much influenced by passing rains. The wells containing potable water are strictly limited to the western side of this range. This may be accounted for on the supposition that the conglomerate forms an impervious barrier to the water falling on the western portion of the range, which consequently finds its way into the wells sunk at the foot of the hills. The fair quality of the water may be explained by its not having percolated through the gypsiferous soil, but having come direct from the rock. On the eastern side of Caroona Hill Range there is an entire absence of any water at all in the wells, the result in all probability of the absence of any retaining barrier to prevent it from becoming absorbed by the dry alluvium of the eastern plain. The geological structure of Caroona Hill Range being unique in this part of the country, it has been found that the occurrence of subterranean supplies of good water are strictly limited to its western side. With respect to the other hill-ranges, the rain flows at once into the plains and never passes from the condition of storm-water to the more equably distributing character of a spring.

From a utilitarian stand-point the future out-look of this locality is unpromising, unless, indeed, some rich mineral deposits are found. The Government Geologist thinks this is not at all improbable.

List of Plants (Gawler Ranges)

As compiled from the Flora Australiensis *of Bentham, the* Fragmenta Phytographiæ *of F. v. Mueller, and as contained in the Herbarium of the Adelaide University.*

Names of plants marked with (*) were collected at Caroona by the writer, and determined by Prof. R. Tate.

Arranged after Baron v. Mueller's Systematic Census of Australian Plants.

Ranunculaceæ.
Ranunculus parviflorus

Laurineæ.
Cassytha melantha

Cruciferæ.
*Sisymbrium nasturtioides

Violaceæ.
Hybanthus floribundus

Sterculiaceæ.
Lasiopetalum discolor

Malvaceæ.
*Sida petrophila
*Lavatera plebeia
Hibiscus Wrayæ
" hakeifolius

Urticaceæ.
*Parietaria debilis

Euphorbiaceæ.
Euphorbia erythrantha
" Drummondi
" eremophila

Sapindaceæ.
*Dodonæa lobulata
Heterodendron oleifolium

Rutaceæ.
*Eriostemon difformis
" capitatus
" lepidotus
Boronia clavellifolia
" cærulescens

Zygophylleæ.
Zygophyllum glaucescens

Amarantaceæ.
*Ptilotus obovatus
" *var.* grandiflorus
" alopecuroideus
" hemesteirus
" exaltatus
" spathulatus

Chenopodiaceæ.
Rhagodia Gaudichaudiana
" spinescens
Atriplex stipitatum
* " vesicarium
*Kochia aphylla
* " brevifolia
* " ciliata
* " villosa
Bassia diacantha
* " paradoxa

Ficoideæ.
Mollugo Cerviana

Polygonaceæ.
Muhlenbeckia adpressa

Leguminosæ.
Bossiæa Walkeri
Psoralea patens
Goodia medicaginea
Templetonia retusa
" egena
*Clianthus Dampieri
Swainsona microphylla
" colutoides
*Acacia calamifolia (?)
" continua
" colletioides
" Burkitti
" aneura

Crassulaceæ.
Tillæa verticillaris

Haloragieæ.
Haloragis elata
Loudonia aurea

Myrtaceæ.
Bæckea Behrii

Rhamnaceæ.
*Cryptandra tomentosa
" leucophracta

Thymeleæ.
Pimelea simplex
" microcephala
" petræa

PROTEACEÆ.
Grevillea aspera
Hakea multilineata

LORANTHACEÆ.
*Loranthus pendulus

RUBIACEÆ.
Pomax umbellata

COMPOSITÆ.
Aster Stuartii
" Muelleri
Minuria leptophylla
Calotis cymbacantha
*Brachycome pachyptera
Polycalymma Stuartii
Gnephosis Burkitti
Chthonocephalus pseudevax
*Cassinia lævis
Helichrysum Cassinianum
* " semipapposum
" polygalifolium
Waitzia corymbosa
Helipterum floribundum
" strictum
" hyalospermum
" pterochætum
" exiguum
*Senecio Gregorii
* " Cunninghami

CAMPANULACEÆ.
Isotoma petræa
Wahlenbergia gracilis

GOODENOVIÆ.
Velleia connata
Goodenia calcarata
" cycloptera.
Scævola spinescens
" ovalifolia
" æmula
Dampiera rosmarinifolia

ASCLEPIADÆ.
Sarcostemma australe

SCROPHULARINÆ.
Euphrasia Brownii

SOLANACEÆ.
*Solanum fasciculatum
" Sturtii
* " lacunarium
" ellipticum
*Lycium australe
Nicotiana suaveolens
Anthocercis anisantha

BORAGINEÆ.
*Halgania cyanea

LABIATÆ.
Prostanthera striatiflora
Teucrium corymbosum
Westringia Dampieri

MYOPORINEÆ.
Myoporum platycarpum
*Eremophila scoparia
" Paisleyi
* " oppositifolia
" McDonnelli
" Brownii
* " maculata
* " latifolia
" alternifolia
* " longifolia

EPACRIDEÆ.
Styphelia Sonderi
" cordifolia

LILIACEÆ.
Xerotes leucocephala
" glauca

GRAMINEÆ.
Amphipogon strictus

FILICES.
*Cheilanthes vellea
* " tenuifolia
" distans
* " Clelandi
*Gramnites rutæfolia
*Adiantum Æthiopicum

Definitions of Two New Australian Plants.

By Baron Ferd. von Mueller, K.C.M.G., M.D., F.R.S., &c., and Professor Ralph Tate, F.G.S., F.L.S., &c.

[Read October 2, 1887.]

Cheilanthes Clelandi.

Dwarf, stipes shining, dark-brown, almost glabrous; fronds small, semilanceolar-deltoid in outline, bipinnate, greyish-green; rhachis beset with very short, spreading, somewhat glandular hairs; segments of frond broadly linear, sessile, almost blunt, flat, minutely crenate-serrulate, glabrous, the terminal segment somewhat elongate; indusium membranous, extending broadly and uninterruptedly along the whole lower margin of the fertile segments; sori minute, dispersed, one at the upper end of each of the prominent pinnately divergent veins, each separately lodged in a sinus of the serrature.

On Caroona Hill in the Gawler Ranges, 45 miles due west from the head of Spencer Gulf; *Dr. Cleland.*

The only specimen available for examination is devoid of its rhizome; the stipes is about as long as the frond; the latter reaches a breadth of two inches and a length of three and a half, it is remarkably pale, particularly so in contrast to the dark-brown rhachis; the segments are nearly one-eighth inch broad, the indusium covering in close appression the greater portion of the soriferous segments; sporangia very few in each sorus, almost unprovided with stalklets.

This singular fern combines the indusium of a *Pteris* with the disposition of the sori of a *Cheilanthes*, no threadlike receptacle uniting the sporangia into continuity, the latter being perfectly concealed. A close approach is offered by this plant also to *Cryptogramme* with which genus Prantl (in Engler's Botanische Jahrbücher, III., 413), unites *Onychium* and *Llavea*. Whether our new fern, which is preferentially placed under *Cheilanthes* but just as well referable to *Cryptogramme*, has the generally dimorphous fronds of the last mentioned genus, remains to be ascertained.

In habit this fern closely resembles *Pellæa pilosa*, *P. Bojeri*, *P. densa*, and *Cheilanthes pulchella*. The generic position, assigned to it, is rendered all the more justified, as *Cheilanthes subvillosa* has also a continuous equally wide and rather ample indusium. Moreover the general similarity of *C. Clelandi* to

C. Prenticei is very remarkable, though the latter, which as yet is only known from Thursday Island in Torres Straits, conforms with the ordinary type in the genus as regards narrow irregular and somewhat crenulate reflection of the frond-margin for forming indusia over crowded sporangia, while the underside of the fronds is clothed with short hairs and the veins are much less prominent. Finally it may be added that *C. Prenticei* is closely allied to *C. fragillima*.

Newcastlia Dixoni.

An erect undershrub, moderately branched, attaining to two feet, densely tomentose; leaves from rhomboid to cordate-ovate, sessile rather short, flat, thinly tomentose on both sides with whitish branched hairs; lobes of the calyx narrow semilanceolar, considerably longer than the tube; corolla about thrice as long as the calyx, slightly bearded inside near the base, otherwise almost glabrous; corolla-lobes narrow semilanceolar, nearly as long as the tube; stamens hardly half as long as the corolla-tube, inserted near the base; anthers cordate-orbicular; style short, as well as the ovary glabrous.

On sand-ridges at Ral-ral on the River Murray, 30 miles from the Victorian border; also at Crystal Brook; *Mr. Samuel Dixon*.

Leaves from one-third to two-thirds of an inch long and nearly as broad. Calyces thinly tomentose outside. Corolla almost half an inch long. Ovary longer than broad, attenuated into the style.

Nearest to *N. spodiotricha* as regards form of corolla and anthers, but in other respects very different.

The two following species are also additional to the flora of extratropical South Australia:—

Stenopetalum croceum, Bunge (emended by F. v. M. in Frag. Phyt. xi. 6), at Innaminka on Cooper Creek (Mr. James McLeod!); the trisect petals are yellow. This plant has hitherto been known only from the western districts of West Australia.

Geijera salicifolia.—This graceful tree has now been traced by Mr. Samuel Dixon from the River Darling district into South Australian territory to Ral-ral on the River Murray.

Notes on the Geological Features of the Teetulpa Goldfields.

By H. Y. L. Brown, F.G.S.

[Read April 5, 1887.]

These fields are situated in the north-east district of the province, and are about 200 miles from Adelaide in a direct line. In its general appearance the country is uninteresting. The hills are low and undulating, and but few trees of any kind grow upon their slopes. They are covered, together with the flats and plains that lie between, with saltbush and bluebush. The few trees growing in the neighbourhood are, for the most part, sandalwood, and occasionally mallee.

The country is covered with a yellow loamy clay of varying thickness, and quartz fragments. The quartz is derived from the reefs and blows, with which the neighbourhood abounds.

The Primary rocks consist principally of undulating faulted strata of clay-slate, calcareous clay-slate, limestone, and clay-slate conglomerate. Their strike is, for the most part, east and west, and they are much jointed and cleaved in the same direction.

The cleavage is at vertical and high angles, and almost entirely obliterates the bedding This makes the rocks appear to dip at high angles. The bedding, may, however, be generally detected by the different colours and hardness of the rock.

No fossils have been found, but the age of the rocks is the same as those of which the main ranges to the southward are composed. They are, in fact, a continuation of those ranges.

In places the clay-slate is a conglomerate, for boulders and pebbles of granite, quartzite, sandstone, and other silicious rocks are scattered through it in greater or less numbers.

There are no defined dykes of igneous rock visible on the surface, but in some places decomposed micaceous veins have been met with. It is probable that as the country is underlaid by granitic and gneissic rocks, the igneous rocks occur to a greater extent at lower depths.

Quartzite and sandstone beds are interstratified in places, but, comparatively speaking, they are not so frequent and persistent as in other parts of the surrounding districts.

Eastward, towards the Weekeroo and Bumbumbie Ranges, these strata are underlaid by gneissic rocks, quartzites, mica schists, and metamorphic granite. These have a more or less

vertical dip, and an easterly strike, and have had dykes and masses of granite intruded into them.

In the first-mentioned set of beds there are numerous quartz reefs and veins. Their general strike is in an east and west direction, but they also intersect the country more or less meridionally.

North of Brady's Gully there are gravel and boulder drifts, composed chiefly of quartz. These occupy a raised tableland adjoining the flats of Salt Creek. They exactly resemble the Pliocene auriferous gravels of Barossa and Echunga, but so far as they have been tested they have not been proved to be payably auriferous.

The gold in Brady's, Goslin's, and other gullies is found in the late tertiary and recent alluvial drifts and surfacing. In Brady's Gully the auriferous deposit is spread widely over the flat, the depth of sinking varying in accordance with the thickness of the alluvium, the most shallow parts being where the present watercourse has eroded its upper portions.

Owing to the prevalence of limestone and calcareous slate beds, there is an abundance of travertine limestone in the soil, and found coating the rocks. In numbers of places this also cements the gravel, and forms a calcareous conglomerate or cement. This is frequently found to carry gold.

With regard to the origin of the gold, there is no doubt but that many of the nuggets and the greater part of the finer alluvial gold has been derived from quartz reefs. Specimens have been found combining quartz and gold. It is also found in iron oxide, but a matrix of ferruginous and travertine limestone is most frequent. It is possible that from these veinstones the largest nuggets have been derived.

These veins, being small and irregular, were probably difficult to discover. In many instances, possibly, they had been entirely eroded at the same time as the formerly-existing superincumbent strata which supplied the gullies with gold.

Good reports have recently been received from the men working the reefs, and rich specimens of gold have been shown.

In one reef—the Ironclad—carbonate of bismuth and lead has been found associated with the veinstone and gold. Bismuth is a good indication of the presence of gold.

The Underground Waters of South Australia, and Suggestions as to Mode of their Utilization.

By Thomas Parker, C.E.

[Read May 3, 1887.]

The existence of large quantities of underground water in South Australia has long been recognised, and they have been utilised to a considerable extent to the great advantage of the country, both by the ordinary method of wells, as also by means of bore-holes into artesian waters. There are, however, some drawbacks to these methods of obtaining water arising from the cost of lifting it to the surface, and also in the case of artesian waters rising to the surface, in most cases, in small quantities, and at a low elevation not convenient for distribution over any great extent of country. For these reasons I have been led to enter into the inquiry during recent years as to whether it is not possible to avail ourselves of these subterranean waters by means of tunnels in the hills, and thus obtain larger supplies at much less cost, and at levels more convenient for distribution to our cities and towns or for irrigating our plains. I am now inclined to think the answer can be given in the affirmative, and my object in these notes is to give a few data and reasons in support of that conclusion, and to endeavour to reduce to a scientific form our present data respecting the underground waters.

I had an opportunity some time ago of examining the large district and extensive basin through which the Willochra Creek has its course, with numerous branch creeks from the hills, and I obtained particulars over a wide district of the general position of the underground waters. From the depths at which the water stands in a large number of wells on the sloping country on the eastern face of the Flinders Range, I ascertained that on a line running about two miles below the top of the range the water in the wells was pretty uniformly at a depth of from 90 to 100 feet from the surface or creek level, and the water generally free from salt, and useful for domestic purposes and for irrigation. On a line lower down, about two miles, and near and parallel to the main road from Quorn to Wilmington, the wells were found to be about 150 feet in depth, and generally slightly brackish.

From these data and from levels taken with the aneroid barometer, I laid down last year a hydro-geological section of the country from the Coonatto Range, past the township of Bruce, across the Willochra Valley, and the Flinders Range referred to, as far as the next valley of the Capoivie Creek. On this section I showed the line of surface, and underneath and nearly parallel to it the line of saturation or underground water line on the slope of the hills where my data extended, and then projected this latter line under the plain at the township of Bruce at a depth of about 190 feet from the surface. I notice whilst writing that a boring party under the Conservator of Water (J. W. Jones, Esq.) have just struck good water near Bruce at a depth of 215 feet, which is artesian, and rising to the surface, flows over at the rate of 10,000 gallons per day. The water is found in a bed of white sand two feet six inches thick, which has a bed of white clay above it three feet in thickness, and a similar bed below it two feet in thickness. These beds of clay seem to act as a channel enclosing and conveying the water from its source, which is most probably from percolation into the alluvial beds from the creek at some point below the anticlinal axis.

The conclusions I am inclined to draw from these and other similar data are the following, viz.:—(1) The underground waters coming from the hills in that district are flowing below in the same general direction as the fall of the surface of the country, and on a line nearly parallel to it. It is most probable that the same conditions prevail generally throughout the Flinders Ranges, of which this is a part. The underground waters from the Mount Lofty Range seem also to pass under the plain in a similar position.

At Glen Osmond, where the surface is 469 feet above sea level, the line of saturation is about 26 feet to 40 feet from the surface. This line passes under and nearly parallel to the surface to Adelaide, where it is about 70 feet below the City level. In the bore at Kent Town, according to the notes by Professor Tate, F.G.S., &c., published in the Society's Proceedings, the depth of water is also 70 feet. Proceeding westward to Kilkenny, the main body of water is at depths varying from 76 feet to 118 feet; in addition to this, at the latter place, water is found at a little less depth. At Port Adelaide the only deep boring record I have been able to obtain shows that down to a depth of 100 feet from the surface this main stream of water is not reached.

On the plain of the River Wakefield, which I examined last year, there is a remarkable peculiarity in the underground waters, which there appear to be divided into two streams running parallel to each other, one of which is quite salt

and the other fresh and useful for all purposes. I notice that in the bore put down at Port Wakefield by the Engineer-in-Chief to a depth of 550 feet, described in the Society's Proceedings in 1881, the water, found at depths varying from about 40 feet to 230 feet from the surface, was very salt, and the bore was abandoned, as there was no sign that the expenditure would result in a supply of water suitable for locomotive engines or any other purpose. I think it would be worth inquiring as to whether this bore was not in the line of this stream of underground salt water just referred to, and, by taking the lines of fresh water wells across the plain from near Balaklava westwards, endeavour to ascertain, if possible, the locality of this underground fresh water near Port Wakefield.

(2). The source of these underground waters is percolation from the surface. This percolation takes place chiefly under the beds of rivers, creeks, and other water-courses in the hills and on the plains, in a vertical direction, and also laterally on each side of the river.

In South Australia that portion of the rainfall is much the larger which never reaches our rivers and creeks, but enters the ground on or near the spot where it falls, and goes to swell the volume of the subterranean streams. This proportion of the rainfall thus sinking into the ground varies very much in different countries and from various causes.

This subject of the proportion of our rainfall lost by percolation and other causes is a very difficult one, and also of the greatest practical importance. In taking gaugings of the water flowing in the River Wakefield during a part of the year 1886, I found that out of an average rainfall over the catchment area of that river of $21\frac{3}{4}$ inches, the quantity flowing in the river would only amount to $\frac{18}{100}$ of an inch per annum. As the gaugings were only taken for three months, the quantity per annum is only approximately estimated. I find that the gaugings of the Para River at Barossa in 1884 show about five inches discharged in the river out of an annual rainfall of $21\frac{1}{2}$ inches, and at Beetaloo in 1885 only $\frac{6}{10}$ inch out of a rainfall of $25\frac{1}{2}$ inches. These data show an enormous loss by percolation and evaporation and absorption, especially in the years 1885 and 1886. The loss from these causes is about as follows, viz.:—At Barossa, in 1884, $16\frac{1}{2}$ inches loss out of a total rainfall of $21\frac{1}{2}$ inches; at Beetaloo, in 1885, $24\frac{7}{10}$ inches loss out of a total rainfall of $25\frac{1}{2}$ inches, and at the River Wakefield, in 1886, $21\frac{1}{2}$ inches out of a total of $21\frac{3}{4}$ inches annual rainfall. Assuming the loss by evaporation and absorption to be half the above total quantities lost from all causes, the annual loss due alone to percolation underground will be as follows, viz.:—At the

Barossa catchment area annually a loss of $8\frac{1}{4}$ inches in 1884, and 5 inches flowing in the river in the hills; at Beetaloo, in 1885, loss by percolation $12\frac{3}{10}$ inches, and flowing in the river $\frac{6}{10}$ inch; and at the River Wakefiel, in 1886, loss by percolation $10\frac{3}{4}$ inches, and flowing in the river in the hills where the river gauge was fixed, $\frac{15}{100}$ of an inch.

It will be seen by these calculations from the river gaugings that as the rainfall decreases, as in the years 1885 and 1886 in this colony, the proportion of water percolating underground largely increases. The same takes place in other countries. For instance, at the gathering ground of the Liverpool Waterworks it was observed that with a rainfall of 48 inches the water lost by percolation was only 18 per cent., whilst during a year with a rainfall of only 34 inches the loss from this cause was 33 per cent. of the rainfall. I have not noticed the differences of the geological features of the catchment areas of our rivers, as probably not much variation is due to this cause.

3. The next conclusion I draw is that in South Australia generally the waters passing underground are much larger in quantity than those flowing on the surface. It will be seen that the amount of loss by percolation in the mountain gathering grounds of the rivers referred to is very much larger than the portion flowing in the rivers. The comparative account is as follows, viz.:—In 1884, a year with about the average rainfall of the previous 20 years, the water lost by percolation in the hills is one-and-a half times the quantity flowing in the rivers at that point. In 1885 the percolation is twenty times the flow in the rivers, and in 1886 the loss by percolation is no less than about sixty times the flow in the rivers. Some of these waters reappear in the beds of our rivers in the hills in the form of springs more or less permanent, but only in small quantities compared to the water that has gone permanently underground, and, in most cases, this spring water, after flowing a short distance, is again lost by percolation. This is seen in Mount Brown and Spring Creeks, Willochra district; the Saunders Creek and South Rhine River; the Rivers Torrens, Wakefield, and Broughton; in some of the creeks in Baroota and other localities on the western slopes of the Flinders Ranges; also in many other districts that might be named.

In addition to this loss in the hills we have also to consider the further great loss of water in the beds of the rivers and creeks after they debouch upon the plains, which, as is well known, sometimes amounts to a total disappearance of the stream into underground channels.

In August, 1886, I observed the flood waters of the River Wakefield coming down after a long continuance of dry weather, and the progress in its channel across the plain near

Balaklava was only at about the rate of half a mile in 24 hours, and frequently the head of the flood remained stationary for half an hour whilst it poured into one of the many large fissures in the river bed. Two years ago it was noticed that the River Avoca, in Victoria, required a period of ten days to flow along one of its lower reaches about 27 miles in length, or only a speed of about two and three-quarter miles per day.

This water, lost by our rivers on the plains, enters the ground and percolates vertically, and laterally to a greater or less distance, according to the permeability of the beds underneath or the existence of old river channels, which, in some instances, allow of lateral percolation to a still greater distance from the river.

This lateral percolation, and the gradual increase of depth from the surface of the line of saturation, may sometimes be traced with considerable distinctness; as, for instance, on the plain of Adelaide, the River Torrens appears to percolate laterally under the city of Adelaide, and it was noticed a few years ago, after the Torrens dam was filled, the water supply in wells in Adelaide at or below the river level was much larger than before. The River Torrens also percolates through Findon as far as Woodville, about two miles, and, most probably, in one or more old river beds; but, on crossing the Port-road, about one mile farther we come into dry country, which seems to be outside the limit of percolation. In the hills it is most probable that the lateral percolations from the creeks and smaller watercourses in the numerous gullies almost intersect each other; and if this is so, the area of underground water below the lines of saturation will be almost continuous. In all cases, however, the hydrogeological features of each locality will require to be carefully examined and studied before explorations for underground waters are undertaken.

In the alluvial deposits of our plains these subterranean waters generally saturate the permeable beds, and then collect and flow in the beds of sand and gravel overlying the clays or other impermeable beds. In the ranges they are found in small streams in the fissures of the quartzites and other harder rocks, and saturating the sandstones, and passing through the bedding and, I think, the cleavages of the shales and clay slates, and are met with by boring or sinking in the form of small feeders rushing out in spray form, or in considerable streams, according to the size of the fissures and the height of the source above the point of outlet.

Assuming these deductions as to the great loss by percolation in the hills to be correct, we may conclude that the strata underneath our numerous and extensive mountain ranges below the lines of saturation form one almost continuous under-

ground reservoir of water, from which we could draw permanent and large supplies, and which could be brought out by gravitation at levels suitable for distribution over our plains where required.

Such underground water supplies in many other countries have been turned to practical account. For instance, in California, where tunnelling has been carried out under some of the rivers; at Seville, in Spain, where the water supply is obtained by a tunnel into water-bearing strata, consisting of permeable calcareous rocks resting on impermeable clay. The springs rise and flow away through the tunnel to the city. Some parts of these tunnelling works are said to have been carried out by the ancient Romans. Explorations also were made by tunnels in the hills in the neighbourhood of Lisbon, resulting in obtaining a supply of about 120 million gallons per annum; also the city of Florence has obtained water by similar means. A tunnel has been driven into the valley of the River Arno, and the supply of water, which is of an extra pure quality for domestic purposes, is no less than 1,734 million gallons per annum, or about twice the capacity of the city of Adelaide waterworks, and the total cost of these Italian works was only £268,000, or not quite one-third the cost of the Adelaide waterworks!

As, however, our conditions are different from those of the countries just named, it appeared to me necessary to examine the question *ab initio*, and entirely from the standpoint of our own climatic and geological conditions. In some of these countries the rainfall is much larger than here, and in others, though the rainfall is no greater than our own, yet the rivers are fed by the melting of snow on the mountains. Notwithstanding these climatic differences, I have no reason to doubt the conclusion that our underground supply of water thus available in the hills is of such a great extent as to make the question of its utilization one of the most important questions for our own country, as well as the various other colonies of Australasia.

In collecting data for my investigations I have been indebted to the kindness of the following gentlemen, which I beg to acknowledge with thanks, namely:—Messrs. Francis Clark and Sons, Adelaide, for particulars of bores at Kilkenny and Port Adelaide; Mr. Burnell, for borings at Hindmarsh; J. W. Jones, Esq., Conservator of Water, for borings at Bruce, and levels and depths of water near Adelaide; R. L. Mesteyer, Esq., F.M.S.E., Hydraulic Engineer, for river gaugings at Barossa and Beetaloo.

The method of drawing supplies from these underground water storages in the hills, as I have already indicated, is usually by means of tunnels and branch galleries into the

hills. I would, however, recommend some improvements upon that of simple tunnelling; but as engineering details would be out of the province of this paper, I need not deal with this part of the subject at present except to point out that from the section across the Adelaide plain, already referred to, it is most probable that a convenient place in the Mount Lofty Range, near Adelaide, being selected at or about the level of Glen Osmond, a comparatively short tunnel into the hill would be required to reach the subterranean waters, and convey them to the surface by gravitation at a height of at least 300 feet above the city, or about 100 feet higher than the highest storage reservoir of the Adelaide Waterworks.

There would be many great advantages in obtaining supplies of water by this method; amongst others I may note the following, namely:—(1) An immense saving of cost as compared with the construction of storage reservoirs on the surface. The water being already naturally stored, the expenditure is only required for tunnels and similar works, which may be regarded as corresponding to those parts of the works for conveyance of the water in other schemes, namely, the works of distribution, and the cost of the usual storage reservoirs which would be in great part saved by this method. (2) This means of obtaining water may also be used with advantage as a supplementary source of supply in connection with storage reservoirs, which are liable to either give out in extra dry seasons or be run down to such a low level that the water at the bottom, containing an extra quantity of solid and organic matters in suspension and otherwise ready to engender impurities, is liable to become injurious to the public health when used for domestic purposes. (3) In the case of water supplies for our cities and towns, this method would avoid the danger of contamination of the water in the gathering ground likely to arise from the increase of cultivation, the use of manures, and the pasturing of cattle, as in most cases these underground waters are very pure on account of having passed through the natural filtering beds of stone, gravel, or sand, and also not having been rendered salt by passing a long distance underground, as in the case of many of our waters obtained in wells and borings on the plains

I will only further add that, in view of the very great importance to South Australia of obtaining additional supplies of water for our cities and towns, as well as for irrigation purposes throughout the country, and at a moderate cost—especially for irrigation—I hope these notes may lead to inquiry, which, I trust, may eventually result in steps being taken to further utilise our underground water supplies in our numerous mountain ranges, which, in my opinion, are so extensive and valuable.

The Gastropods of the Older Tertiary of Australia. (Part I.)

By Professor Ralph Tate, F.G.S., F.L.S., &c.

[Read October 4, 1887.]

Plates I.–XIII.

[Note.—All measurements are in French millimetres. The direction of the ornament or sculpture is termed *spiral*, or *encircling* when it follows the spiral curvature of the shell; when coinciding with the lines of growth *transverse* as regards the whorls, or *axial* with respect to the length of the shell.]

FAMILY MURICIDÆ.

Genus Typhis.

SYNOPSIS OF SPECIES.

Varices spinous.
  Upper whorls angular; varix simple. 1. *T. McCoyii.*
  Upper whorls squarely rounded; varix double. 2. *T. acanthopterus.*
Varices foliar, adpressed, laciniated.
  Shell four times as long as wide; whorls almost disjoined, posteriorly sloping inwards. 3. *T. disjunctus.*
  Shell stouter; whorls quadrate, posteriorly flat. 4. *T. laciniatus.*
Varices angular; whorls subangulated. 5. *T. tripterus.*
Varices absent; tubular projections compressed, adpressed to the spire. 6. *T. evaricosus.*

1. Typhis McCoyii, *T. Woods.*

Typhis McCoyii, T. Woods, Proc. Roy. Soc., Tasmania, for 1875, p. 22, t. i., fig. 5.

Typhis hebetatus, Hutton, Trans., N.Z. Inst., vol. ix., t. xvi., fig. 1, 1877.

Shell ovately fusiform; whorls seven and a-half, the two and a-half embryonic whorls small, smooth, and rounded; the next one or two squarely rounded and medially keeled; the rest subangularly convex, the keel close to the anterior suture. Body whorl somewhat quadrately convex, with four spinous varices which end posteriorly on the blunt posterior keel in a strong spine, anteriorly they are flatly expanded. There are five or six spines on each varix, which diminish in size towards

the canal; the spines on the varices of the second posterior whorl are sometimes connected by a faint spiral ridge. Between each varix is a tubular spine. The posterior whorls, with alternating conical spines and tubular projections. Surface marked with striæ of growth, otherwise smooth. Aperture ovate; peristome continuous, thick, erect; canal closed, compressed, of moderate length, curved to the right; anterior varix decurrent on the outer face of the canal. The three other varices terminate in imbricating spines spirally arranged on the canal.

Length, 38; breadth, 22.

Localities.—Table Cape (*Hobart Mus., R. M. Johnston!*); lower beds at Muddy Creek; River Murray Cliffs, near Morgan. Also in the Pareora Series at Mount Harris, &c., N. Zealand (*Wellington Mus.!*).

The identification of *T. hebetatus* with the Australian *T. McCoyii* rests upon the comparison of authentic specimens.

This fossil is somewhat related to *T. pungens* of the European Eocene; but it has a shorter spire, different shaped whorls, and more spines on the varices.

2. Typhis acanthopterus, *spec. nov.* Plate i., fig. 2.

Shell ovately fusiform; whorls seven and a half; the one and a half embryonic whorls, small, rounded, and smooth; the rest of the spire of gradated whorls, the posterior one-third of each whorl flattened or slightly sloping; the ornament consists of a row of relatively large spines on the shoulder of the whorl and of two rows of smaller spines between the former and the anterior suture. The body whorl is squarely rounded, ornamented with four spinous varices, each of which is subordinated anteriorly by a similar but smaller varix; there are about eight slender recurved spines on each varix; between each varix there is a stout, long, and tubular spine on the shoulder of the whorl. Aperture and canal as in *T. McCoyii*.

The surface is striated with growth-lines, and is obliquely ridged coincident with the variceal spines.

Length, 23; breadth within the spines, 10; length of aperture and canal, 14.

Locality.—In the blue clays at Schnapper Point, Port Philip Bay.

This species differs from *T. McCoyii* by its sub-quadrate whorls, more spines on the varices, by the duplication of the varices, and by the oblique ridges between the varices.

3. Typhis disjunctus, *spec. nov.* Plate i., fig. 14.

Shell narrowly elongated; whorls four and a half, sloping inward at the suture, almost disjoined; from the keel there

proceed four lamelliform varices with serrately dentate margins, and on the last whorl are continued on to the canal-there terminating in spiniform squamæ; alternating with the varices of each whorl are four tubular spines, long and backward directed. The surface of the shell is ornamented with faint spiral ridges and transverse folds and striations. Canal very long, flattened, pointed and slightly recurved at the end; aperture circular or nearly so; peristome continuous.

Length, 20; breadth, 5; length of aperture and canal, 12.

Localities.—Lower beds at Muddy Creek, Hamilton; and blue clays at Schnapper Point, Port Phillip Bay, Victoria.

4. Typhis laciniatus, *spec. nov.* Plate i., fig. 10.

Shell elongately fusiform; whorls five and a half, the one and a half embryonic whorls small and rounded; spire-whorls gradated, narrow, and flattened posteriorly, crowned at the shoulder with one row of spines. Body-whorl sub-angulated in front of the suture, attenuated anteriorly; ornamented with four lamelliform adpressed varices, their edges jagged but developed into a spiniform scale on the shoulder of the whorl; a long, slender tubular spine alternates with the varices. Surface striated with growth-lines.

Length, 11; breadth, 4·5; length of aperture and canal, 7.

Locality.—Lower beds at Muddy Creek, near Hamilton, Victoria.

This species differs from *T. disjunctus* by its smaller size, but greater proportionate breadth, and its more compact whorls.

5. Typhis tripterus, *spec. nov.* Plate iii., fig. 14.

Shell fusiform; whorls six, the two and a half apical ones smooth and rounded; the rest of the spire whorls medially subangulated, bearing a row of tubulations which are slightly posterior to the keel and alternate with a row of short conical projections situated nearer to the anterior suture. Body whorl subquadrately convex posteriorly, attenuated in front; ornamented with three angular varices, which terminate at the posterior angulation of the whorl in an ill-defined tubercle, and with three tubulations, each of which is closer to the varix in front of it than to the one behind.

Surface of the whorls finely striated with growth-lines, and at the bases of the tubulations obliquely striated. Canal long, broad, nearly straight, not closed.

Length, 9·5; breadth, 4·5; length of canal and aperture, 5·5. An incomplete specimen measures, length 13, breadth 6.

Locality.—Clayey green sands, Adelaide bore (two examples).

6. Typhis evaricosus, *spec. nov.* Plate i., fig. 6.*

Shell acuminately ovate; whorls six and a half, of which the two and a half apical ones are rounded and smooth; the rest of the spire whorls are convex, flattened at the suture, bearing tubulations at the shoulder which are broad, compressed, and prolonged backward; the posterior margin of each whorls is undulate. Body whorl with four tubulations, which are broad at the base, compressed, slightly bent to the left, and adpressed to the spire; the tubulations are continued on the anterior portion of the whorl as broad, curved, medially depressed undulations. There are no varices between the tubulations.

Aperture oval; peristome continuous; canal closed, compressed, broad, and abruptly tapering to a short hardly recurved point.

Surface smooth and shining, marked with striæ of growth and faint spiral lines, and faintly obliquely ridged on the tubulations.

Length, 7; breadth, 3; length of aperture and canal 3.

Locality.—Lower beds at Muddy Creek.

T. evaricosus agrees with the recent species *T. duplicatus*, Sow., and *T. arcuatus*, Hinds., in having the tubulations bent back, and the varices obliterated by confluence therewith; from the first, to which it is more allied, it differs by its smaller size and adpressed tubulations.

Genus Murex.

synopsis of subgenera.

Varices three, wing-like — *Pteronotus.*
Varices three, foliar — *Chicoreus.*
Varices more than three
  Canal long, nearly straight; spire very short. — *Rhinocantha.*
  Canal short.
    Varices spinose. — *Phyllonotus.*
    Varices foliated or simple — *Ocinebra.*

Subgenus Pteronotus.

synopsis of species.

I. Varices three on each whorl, continuous from whorl to whorl.

* The figure, which was drawn from a worn specimen, though fairly representing the shape and position of the tubulations, does not show the tubulations applied to the spire in the manner exhibited by subsequently acquired examples.

a. Last varix broadly expanded.
A. No nodules between the varices.
Distantly finely lirate; finely striated transversely. *M. velificus.*
Strongly lirate, with arched discontinuous threads between. 2. *M. rhysus.*
B. One intervariceal nodule.
Upper whorls inornate; shell ovate. 3. *M. calvus.*
Upper whorls lirate; shell narrower. 1. *M. velificus, var.*
b. Last varix narrowly winged; extended into a spine.
Spine long; no nodules between the varices. 4. *M. manubriatus.*
Spine inconspicuous; three intervariceal nodules. 5. *M. trinodosus.*

II. Varices three on body whorl, increasing posteriorly; discontinuous; outer lip denticulate.
Spiral threads, about 20, slender. 6. *M. bifrons.*
Spiral threads, about 8, stout. 7. *M. didymus.*

1. Murex velificus, *spec. nov.* Plate i., fig. 8.

Shell trigonal elongated, very thin. Whorls seven, of which the one and half apical whorls are small, smooth, and rounded. The rest of the shell is provided with three varices. Whorls flatly convex, ornamented with fine spiral ridges on the anterior half (four on the penultimate whorl) and transverse striæ and threads. The varices are widely foliaceous, erect, axial, and regular; ornamented with radial ridges continued from the liræ of the whorls, and arched transverse striæ and threads; the margin of the varices is entire or inconspicuously serrated.

Aperture small, oval; peristome continuous, thickened; the outer lip crenulated on the margin. Canal long, nearly closed, slightly oblique, tapering to a slender recurved point.

Some individuals from the River Murray cliffs possess an intervariceal tuberculation.

Total length, 28; breadth, 7; length of aperture and canal, 18.

Localities.—Lower flats at Muddy Creek; blue clays at Schnapper Point, Port Philip; River Murray cliffs.

2. Murex rhysus, *spec. nov.* Plate i., fig. 7.

Shell trigonal elongated, thin; whorls seven (apex wanting), somewhat convex; varices three, widely foliaceous, erect, slightly obliquely directed, somewhat falcately reflexed; margin entire. Surface ornamented with stoutish, narrow, angular,

equidistant threads (15 on the penultimate whorl), the much wider intervening furrows, with subremote, curved, disconnected raised lines, as in the recent *M. triformis*. Aperture oval; peristome continuous, its margin thin and plain; canal unknown.

Length, excluding canal, 32; breadth, 14; height of aperture, 11.

Locality.—Blue clays at Schnapper Point, Port Philip.

This species is distinguished from *M. velificus* by its rounded whorls, equally ornamented with spiral threads, by its peculiar interstitial sculpture, and by the shape of its last varix.

3. Murex calvus, *spec. nov.* Plate i., fig. 11.

Shell ovately fusiform; whorls seven; varices three, oblique, narrowly foliaceous, margin entire; one intervariceal small nodulation. Surface of anterior whorls with distant faint spiral threads, crossed by distant faint ridges and striæ; upper whorls transversely striated. Canal open, curved to the left, apparently short; aperture large, ovately-oblong, inner lip dentate.

Length (incomplete), 22; breadth, 9; height of aperture, 7.

Localities.—Clayey sands, Adelaide bore; and Turritella-clays, Blanche Point, Aldinga Bay.

This species resembles *M. rubridentatus*, Reeve, in shape and obliquity of varices, but it has only one intervariceal nodulation. In all the above characters it is related to *M. pinnatus*, Wood, but the variceal wings are not interrupted as in that species.

4. Murex manubriatus, *spec. nov.* Plate i., fig. 9.

Shell elongately fusiform; whorls seven, somewhat convex, subangulated medially, faintly and distantly spirally lirate, and closely striated, transversely faintly ridged; spire rather obtuse, of one and a half smooth rounded whorls. Varices slightly oblique, narrowly foliated, each ending in a posterior slightly recurved long spine; margin of varix entire.

Aperture ovate; peristome continuous, outer lip slightly thickened, edentulous. Canal closed, long, nearly straight, and slightly recurved.

Length, 24; breadth, 8; length of apertures and canal, 16.

Localities.—Clayey sands, Adelaide bore; and Turritella-clays at Blanche Point, Aldinga Bay.

5. Murex trinodosus, *spec. nov.* Plate i., fig. 4.

Shell trigonal elongated; whorls six or more, somewhat convex, with three stout intervariceal nodulations; last whorl inconspicuously biangulated. Varices oblique, very narrowly winged, each ending posteriorly in a short spine. Aperture

large, ovate, peristome continuous, outer lip edentulous ; canal straight and short.

Length, 20 ; breadth, 8·5 ; length of aperture and canal, 7.

Locality.—Upper beds at Muddy Creek.

Murex trinodosus is separable from the recent *M. Angasi*, Crosse, by being broader across the posterior part of the body whorl, by the variceal spine not hooked, by the less angulated whorls, longer canal, and by having three stout intervariceal nodulations instead of two inconspicuous ones.

6. Murex bifrons, *spec. nov.* Plate i., fig. 12.

Shell ovately trigonal, stoutish ; whorls six, convex, spirally equally ridged ; apex obtuse, of one and a half smooth whorls. Varices foliaceous, moderately broad, erect, oblique, and irregular ; there are three on the body whorl, but six on each of the posterior whorls. Body whorl with about 20 equidistant slender, spiral threads, transversely striated ; margin of the anterior varix slightly crenulated between the liræ. Aperture large, subquadrate ; peristome entire ; outer lip tuberculated on the thickened margin ; canal short, open, curved.

Length, 15·5 ; breadth, 6 ; length of aperture and canal, 9.

Localities.—Adelaide bore and "Turritella clays" at Blanche Point, Aldinga Bay.

7. Murex didymus, *spec. nov.* Plate iv., fig. 13.

This species is similar to the last, but has few (eight) and stouter spiral ridges on the body whorl, whorls flatly convex, the canal is proportionately longer, and the margin of the anterior varix is entire.

Length, 17·5 ; breadth, 6·5 ; length of aperture and canal, 11·5.

Locality.—Blue clays at Schnapper Point, Port Phillip.

Subgenus Chicoreus.

SYNOPSIS OF SPECIES.

I. Shell ovate ; varices on anterior whorls crenately spinulose. 8. *M. lophœssus.*

II. Shell fusiform ; varices spiniferous, regular.

A. Posterior spine short and broad.

Whorls rounded, penultimate whorl, equally lirate. 9. *M. Dennanti.*

Whorls subquadrate, penultimate whorl with three strong liræ. 10. *M. Adelaidensis.*

B. Posterior spine long.

a Two intervariceal costæ. 11. *M. basicinctus.*

b No intervariceal nodulations

Posterior spine very long and attenuated. 12. *M. tenuicornis.*

Posterior spine stout, somewhat upward dilated and truncated. 13. *M. amblyceras.*

III. Shell fusiform; varices simple, irregular.

Varices three on last whorl, increasing in number posteriorly; apex small acute. 15. *M. irregularis.*

Varices three to each whorl; apex large obtuse; lamellæ closer. 14. *M. Hamiltonensis.*

8. Murex lophœssus, *spec. nov.* Plate ii., fig. 5.

Shell ovate, conical; whorls eight, including two small smooth rounded turbinated apical ones; the rest of the whorls ventricose, rounded, ornamented with compressed spiral ribs, and transverse lamellæ of growth. Varices, three to each whorl, those on the anterior whorls more or less regular, narrow, thin, and pectinated; the varices of the posterior whorls are simply crenulated by the liræ which pass over them.

The spiral ribs, which are from six to eight in number on the penultimate whorl, are very narrow, the broad concave intervening furrows usually having a medial slender thread; they are traversed by rather crowded lamellæ of growth, which form inconspicuous scales on the liræ. There are usually three or four intervariceal costæ, which are never very prominent—not at all developed on the posterior five or six whorls.

Last whorl with from 12-14 principal liræ which are continued on to the varices, there projecting as small serratures. Aperture oval; peristome continuous; inner lip faintly lirate within; outer lip stoutly lirate within, its margin serrated. Canal closed, depressed, short, sinistrally bent and slightly recurved.

Length, 40; breadth within the varices, 23; height of aperture, 13·5; length of canal, 12.

Localities.—Blue clays at Schnapper Point, Port Philip; lower beds at Muddy Creek.

9. Murex Dennanti, *spec. nov.* Plate ii., fig. 7.

Shell elongate-fusiform; whorls eight, including two small, rounded, smooth apical ones; the rest of the spire whorls convex, slightly depressed at the posterior suture. Varices three, more or less regular compressed, each bearing at the angulation of the whorl a short, broad, erect spine. The fourth, fifth, and sixth whorls with tessellated ornament, more or less granulated

at the intersections, produced by the intercrossing of transverse and from four to six spiral threads—there is one spiral thread on the posterior slope. On the anterior whorls the spiral liræ increase in number, and are of unequal dimensions, whilst the transverse threads become indistinct, or are reduced to striæ. On the penultimate whorl there are ten unequal liræ in front of the angulation, which pass over the varices, producing crenations on their margins; whilst on the posterior slope there are five very slender threads. Aperture ovate, peristome continuous; outer lip thin, smooth within; canal longer than the aperture, contorted and slightly reverted.

Length, 30; breadth, 11; length of aperture and canal, 17.

Locality.—Lower beds at Muddy Creek.

10. Murex Adelaidensis, *spec. nov.* Plate ii., fig. 4.

Shell elongate-fusiform; whorls nine, including two small, rounded, smooth, turbinated apical ones; the rest of the spire whorls subquadrate.

Varices on the three anterior whorls more or less regular, three to each whorl, compressed foliar, each bearing at the posterior shoulder of the whorl a short, broad, erect spine. On the posterior whorls the varices are eight to each whorl, foliar and fimbriated, graduating posteriorly into vaulted scales.

Whorls of the spire, excluding the apical ones, ornamented on the medial portion with three strong spiral liræ, or two strong ones with one or two smaller intervening ones; the posterior slope with one, two, or three slender spiral threads; and there are usually two next to the anterior suture. The whole surface finely striated in a spiral direction, and crossed by rather distant imbricating lamellæ of growth.

Last whorl quadrately-convex, with three or four spiral threads on the depressed area next the suture, the anterior portion with about 15 strong equidistant spiral liræ alternating with slender ones, crossed by subdistant transverse threads less prominent than the principal liræ.

Aperture ovately-oblong; inner lip crenulated on the margin and lirate within; canal not exceeding in length that of the aperture, open, and sinistrally curved.

Length, 20; breadth, 9; length of canal and aperture, 11.

Localities.—Adelaide bore; and "Turritella clays," Aldinga.

11. Murex basicinctus, *spec. nov.* Plate ii., fig. 9.

Shell elongate, fusiform, with a high gradated spire, terminating in a small blunt mamillate apex. Whorls eight, including two smooth apical ones; the next two are rounded, but

flattened at the suture, with four, increasing to six, spiral threads, and about 12 costæ to each whorl; the rest of the spire-whorls medially angulate, ornamented with minutely-scaly spiral liræ, each whorl with three varices and two uninterrupted, prominent, intervariceal costæ. The varices are simple, regular, slightly oblique, each bearing medially a stout, somewhat frondosely expanded spine.

Last whorl with about 15 narrow liræ on the posterior slope; there is a strong revolving rib in alignment with the posterior angle of the aperture bearing a short spine on each varix. Between the basal rib and the shoulder there are about 20 liræ, and about an equal number anterior to it. The liræ are crossed by moderately distant striæ, which produce minute scale-like serratures at the junctions.

Aperture oval; outer lip thin, crenulated on the margin. Canal longer than the aperture, nearly straight and closed.

Length, 37; breadth, 15; length of aperture, 9; and of canal, 13.

Locality.—"Gastropod-bed" of the River Murray Cliffs, near Morgan.

This fossil has some resemblance to the recent *M. crocatus*, Reeve.

12. Murex tenuicornis, *spec. nov.* Plate ii., fig. 6.

Shell elongately fusiform, with a produced spire, terminating in a small obtuse apex consisting of one and a half smooth rounded whorls; the rest of the spire whorls are at first convex, but afterwards becoming increasingly angulated in the middle, each with three thin varices bearing a long slender spine. The ornament consists of one or two faint spiral threads on the anterior half of the whorl, and very fine spiral striæ and arched growth-lines, the intercrossing of which forms a fine close cancellation.

Last whorl angulated, ornamented on the anterior portion with five spiral ribs which terminate on the last varix as short spinous digitations; the variceal spine is long, slender, and slightly arched posteriorly.

Aperture trapezoidal, much longer than wide; peristome continuous, thin, elevated; outer lip angulated at the keel, with three tubercles within anteriorly situated to the angulation; canal long, flat, closed, nearly straight.

Length, 19; breadth, 7; length of canal and aperture, 12; length of last variceal spine, 9.

Locality.—Clayey green sands, Adelaide bore.

The species makes some approach to the recent *M. longicornis*, Dunker.

13. Murex amblyceras, *spec. nov.* Plate ii., fig. 12.

Shell elongate fusiform, with a high gradated spire, terminating in a small blunt mamillate apex consisting of two smooth globose whorls of which the tip is slightly turned down on one side and immersed. Whorls seven, excepting the apical ones, angulated, spirally lirate and transversely closely striated. Varices simple, obliquely continuous from whorl to whorl, each bearing a hollow, vaulted, reverted, blunt spine at the keel. Last whorl a little tumid, with a rounded base, much contracted and produced; ornamented with about eight unequal liræ on the upper part and about 20 similar ones in front of the keel, the stouter ones ending in small digitations on the last varix.

Aperture oval, with an elevated, thin, and continous peristome; margin of outer lip wrinkled; canal long, curved, nearly closed.

Length, 25; breadth, 10; length of aperture and canal, 16.

Localities.—Lower beds at Muddy Creek; blue clays at Schnapper Point, Victoria.

Has considerable resemblance to *M. basicinctus*, but has no intervariceal costations or basal rib.

14. Murex Hamiltonensis, *spec. nov.* Plate iii, fig. 6.

Shell fusiform, somewhat thin, with a high spine of gradate whorls terminating in a blunt, rather large apex (1·5 mills. in diameter), consisting of two globose, faintly spirally striated whorls, the extremity of which is immersed. Whorls six, those of the spire, excepting the nuclear ones, ventricose, subquadrate, excavated at the suture, ornamented with four principal rounded, slightly elevated, spiral threads (one of which occupies the flat posterior area) and by rather distant fimbriated laminæ of growth and transverse striæ.

Last whorl somewhat tumid, narrowly flattened in front of the suture, and rather abruptly attenuated into the beak; ornamented with spiral liræ and three varices. The spiral liræ, of which two are on the posterior area and about ten on the rest of the whorl, are equidistant, sometimes with a slender interstitial thread, and raised into small arched scales as the transverse laminæ pass over them.

Varices of thin adpressed foliations, three to each whorl, very irregularly disposed and not continuous from whorl to whorl.

Aperture oval-quadrate; peristome continuous, thin, and slightly reflected on the columella; outer lip lirate within. Canal shorter than the aperture, moderately arched to the left, and reverted.

Length, 20; breadth, 9; length of aperture and canal, 11.

Locality.—Lower beds at Muddy Creek.

This Murex very closely resembles young examples of *Rapana aculeata.*

15. Murex irregularis, *spec. nov.* Plate vi., fig. 3.

Similar to *M. Hamiltonensis*, with eight whorls, apex considerably smaller, the whorls abruptly truncated medially, the transverse laminæ closer together and inconspicuously raised into scales, the varices irregular, three on the last whorl, increasing to four or six on the next whorls. The fifth and sixth whorls bicarinate and multicostate.

Length, 27; breadth, 11; length of aperture, 7; length of canal, 7; breadth of aperture, 5.

Locality.—Lower beds at Muddy Creek.

Subgenus Rhinocantha.

synopsis of species.

Spire whorls subquadrate, conspicuously lirate; varices compressed, elevated. 16. *M. asteriscus.*

Spire whorls angular, faintly lirate; varices thick and depressed. 17. *M. pachystirus.*

16. Murex asteriscus, *spec. nov.* Plate ii., fig. 10.

Shell pyriform, with a low, somewhat trochiform spire, terminating in a small blunt mamillate apex of one and a half globose whorls. Whorls six and a half, the anterior ones subquadrate with a deeply impressed suture, graduating to flat-sided in the most posterior one. Penultimate whorl bicarinated, with a third angulated thread on the anterior slope, faintly ridged in a spiral and transverse direction.

Last whorl tumid, flattened posteriorly and abruptly attenuated anteriorly; ornamented with five spiral ribs in front of the shoulder, the interstitial spaces with spiral threads and transverse striæ.

Varices, six on each whorl, obliquely continuous from whorl to whorl, simple, narrow, elevated, crenately-nodulose coincident with the liræ. Aperture large, ovately-oblong; outer lip lirate within; columella curved, thickened at its junction with the canal which is shorter than the aperture, nearly straight.

Length, 27; breadth, 19; length of aperture, 11; of canal, 9; breadth of aperture, 7.

Locality.—Lower beds at Muddy Creek.

17. Murex pachystirus, *spec. nov.* Plate ii., fig. 11.

Shell resembling *M. asteriscus* with a higher and flatter spire. Whorls six and a half, angulated next to the anterior suture; striated spirally, and each provided with six broad, depressed variciform plications, those of one whorl more or less alternating with those of the next, undulose between the varices. Last whorl ornamented with six equidistant spiral ribs, which

pass over the varices, and with about three slender threads in the shallow concave interspaces.

Aperture large, trapezoidal; outer lip faintly lirate within; canal nearly as long as the aperture, slightly curved.

Length, 24; breadth, 15·5; length of aperture, 9; of canal, 7; breadth of aperture, 7.

Localities.—"Gastropod-bed," River Murray Cliffs, near Morgan; lower beds at Muddy Creek.

Subgenus Phyllonotus.

SYNOPSIS OF SPECIES.

Whorls quadrate, posterior slope lirate. 18. *M. Eyrei.*

Whorls convexly angular, posterior slope without liræ. 19. *M. sublævis.*

Whorls bicarinate on the anterior half. 20. *M. Legrandi.*

18. Murex Eyrei, *T.-Woods.* Plate iv., fig. 8.

M. Eyrei, Tenison-Woods., Proc. Roy. Soc., Tas., for 1876, p. 93.

Shell fusiformly ovate, with a somewhat high scalar spire, terminating in a small obtuse apex consisting of two smooth whorls. Whorls seven, of which those of the spire, excepting the two apical ones, are quadrate, the slightly upward sloping, posterior area about equalling in breadth the anterior part; last whorl sharply angulated postmedially. Varices seven to a whorl, thinly lamellose, narrow, often obsolete on the posterior area, which at the angle project into short hollow, slightly backward curved spines; on the posterior whorls they lose their lamellose character and become simple costæ, and finally devoid of spines.

The spiral ornament consists of slender equidistant threads, on the last whorl six occupy the posterior two-thirds next suture, those anterior to the angulation are stouter, nearly as wide as the intervening furrows. A rather broad space on either side of the angulation is devoid of liræ, but is closely finely spirally striated.

The transverse ornament consists of rather crowded lamellæ, which are raised into depressed, roundly arched, vaulted scales on the liræ.

Aperture rhomboid-ovate, angulated at the keel, outer lip thin with a crenulated edge. Canal open, about as long as the aperture, sinistrally arched, and somewhat recurved.

Length, 22; breadth, 10·5; length of aperture and canal, 14.

Localities.—Table Cape, Tasmania (*R. M. Johnston!*); lower beds at Muddy Creek, and blue clays at Schnapper Point, Victoria.

19. Murex sublævis, *spec. nov.* Plate iii., fig. 3.

Shell elongate-fusiform, with a high scalar spire; whorls seven and a half, convexly angular, equally sloping from the medial angulation to the sutures. Otherwise resembling *M. Eyrei*, but also differing by the stouter varices, the absence of liræ on the posterior slope of the whorls, fewer liræ on the anterior part of the body whorl, which is attenuated less abruptly into the beak. Inner lip faintly tuberculated within.

Length, 25; breadth, 12; length of aperture and canal, 14·5.

Localities.—Adelaide bore; and "Turritella clays," Blanche Point, Aldinga Bay.

20. Murex Legrandi, *Johnston.* Plate xi., fig. 8.

M. Legrandi, R. M. Johnston; Proc. Roy. Soc., Tasmania, for 1879, p. 32.

Shell fusiformly turriculate, whorls six (apex wanting), those of the spire bicarinate. Last whorl moderately convex, somewhat angulated in the posterior one-third, anterior to which are nine angulated spiral carinæ; the transverse ornament consists of thick distant threads forming slight granulations at points of intersection with the liræ. There are five varices on the last whorl, nine on the next, and increasing in number posteriorly; they are squamose, rather broad, irregularly disposed, and produced into short, vaulted, spiny scales on the posterior carination.

Aperture oval, peristome entire; outer lip with six stout denticulations within, situated anterior to the angulation at the carination. Canal much shorter than the aperture, open, sinistrally curved.

Length, 18; breadth, 8; length of aperture and canal, 9·5.

Locality.—Table Cape, Tasmania (*R. M. Johnston!*).

Has considerable resemblance to *M. cristatus*, Brocchi, but has fewer varices and liræ.

Subgenus Ocinebra.

synopsis of species.

I. Spire whorls flat, varices squamose. 21. *M. biconicus.*

II. Spire whorls convex.

Varices much arched; dense lamellose ornament. 22. *M. camplytropis.*

Varices slightly arched, spire longer; squamose liræ. 23. *M. asperulus.*

III. Spire whorls subquadrate.

A. Embryonic whorls, trochiform, apex acute. 24. *M. trochispira.*

B. Embryonic whorls rounded, apex obtuse.
a. Varices very foliaceous, raised into spinulose squamæ. 25. *M. prionotus.*
b. Varices bluntly tuberculated at the shoulder. 26. *M. minutus.*
c. Varices without tubercles or elevated squamæ.
* Spiral threads on last whorl, thick, 10. 27. *M. crassiliratus.*
** Spiral threads on last whorl, thin, 20.
Outer lip not dentate within. 28. *M. alveolatus.*
Outer lip with three tubercles within. 29. *M. tridentatus.*

21. Murex biconicus, *spec. nov.* Plate i., fig. 3.

Shell elongate, triangularly ovate, with a low flat spire terminating in a small mamillate apex of two whorls. Whorls seven. Varices six, on the last whorl; lamelliform stout, raised into short vaulted scales over the spiral liræ, more conspicuously so on the shoulder of the whorl, posterior to which they are suddenly bent forward, and become almost lost in depressed extended lamellæ. The number of varices progressively increases posteriorly, at first appearing as nodulations at the anterior suture, and with the slightly increasing convexity of whorls acquiring the form of short costæ, ending posteriorly at the carination in blunt tubercles. Last whorl convex, angulated in the posterior third by the suddenly enlarged varices, between which the periphery is deeply undulate. On the rather high sloping posterior area there are about eight unequal slender spiral liræ; the shoulder is ridged medially, and finely striated on the flanks; on the anterior part there are about 12 angular liræ, alternating with an equal number of smaller ones. The furrows between the varices are obscurely transversely lamellated. The spire whorls are lirate and transversely lamellated.

Aperture large, oval; inner lip reflected over the columella; outer lip faintly lirate within. Canal wide open, shorter than the aperture, nearly straight.

Length, 34·5; breadth, 19; length of aperture, 15; width of aperture, 9; length of canal, 10.

Locality.—In a well sinking, River Murray desert.

22. Murex camplytropis, *spec. nov.* Plate iii., fig. 2.

Shell ovate, thick, with a moderately produced spire of somewhat convex whorls, terminating in a relatively large mamillated apex, consisting of one and a half smooth globose whorls. Spire whorls, excepting the apical whorls, varying from convex

to almost subquadrate, especially so in the examples from the River Murray cliffs; ornamented with about seven rounded, equidistant spiral liræ, and transversely by much curved varices and imbricating lamellæ of growth. Last whorl rather ventricose, ornamented with numerous spiral liræ, eight foliar varices and imbricating frilled lamellæ of growth.

In some examples the lamellæ are so dense as to conceal the spiral ornament.

Aperture rotund to oval; outer lip lirate within; canal shorter than the aperture, sinistrally bent, and somewhat recurved.

Length, 16; breadth, 9; length of aperture and canal, 11.

Localities.—Schnapper Point; lower beds at Muddy Creek; River Murray cliffs near Morgan; Table Cape *(R. M. Johnston !)*

23. Murex asperulus, *spec. nov.* Plate iii., fig. 1.

Shell elongate ovate; spire produced, terminating in a small mamillate apex of one and a half smooth whorls. Whorls six, convex or slightly shouldered, spirally lirate, and transversely varicose-plicate, and lamellose striated. There are about twelve thin, similar equidistant liræ on the penultimate whorl, which are raised into rather distant squamæ; varices eight to a whorl.

Aperture oval; canal about as long as the aperture, twisted, and recurved.

Length, 19·5; breadth, 9·5; length of aperture and canal, 10·5.

Localities.—Schnapper Point; lower beds at Muddy Creek; Aldinga Cliffs.

This species differs from *M. camplytropis* by its elongated shape, longer canal, simpler and straighter varices, and by the squamulose threads.

24. Murex trochispira, *spec. nov.* Plate iii., fig. 13.

Shell elongately ovate, with a rather high gradated spire terminating in an acute trochiform apex consisting of four smooth, flat, narrow whorls; the next three spire whorls quadrate and anteriorly bicarinate. Last whorl with a narrow sloping-upward area posterior to the angulation, anterior to which are six high angulated spiral carinæ, alternating with slender threads in the flattish, broad furrows.

The transverse ornament consists of rather distant lamellæ, raised into scales on the liræ and striæ. The varices are five on the last whorl, increasing in number posteriorly; they are lamellose, irregularly disposed, and produced into short, vaulted scales on the carinæ. Aperture oblong-oval, rather

abruptly contracted into a slightly curved, open canal, not so long as the aperture; peristome continuous; outer lip broadly crenulated on the margin.

Length, 10; breadth, 4·5; length of aperture and canal, 6.

Localities.—Lower beds at Muddy Creek; and River Murray Cliffs, Morgan.

The trochiform apex imparts a very distinctive character to this little Murex.

25. Murex prionotus, *spec. nov.* Plate i., fig. 5.

Shell ovate, with a moderate gradated spire, terminating in a small mamillate apex. Whorls seven, quadrate, those of the spire encircled with two strong erect ribs, which are crossed with fimbriated spirally finely striated lamellæ. There are usually two slender threads on the shoulder, one between the two strong ones in the middle of the whorl, and one or two at the anterior suture. Varices irregular, very foliaceous, raised into spinulose squamæ on the spiral ridges; there are six on the last whorl, but are about double in number on each of the succeeding whorls.

Aperture ovate, outer lip smooth within; canal much shorter than the length of the aperture, slightly recurved.

Length, 18; breadth, 9; length of aperture, 9·5.

Localities.—Adelaide bore; and Turritella clays, Aldinga Bay.

26. Murex minutus, *Johnston.* Plate x., fig. 14.

Murex minutus, R. M. Johnston, Proc. Roy. Soc., Tasmania, for 1879, p. 32.

Shell ovate-fusiform, with a moderately high gradated spire terminating in a mamillate apex of one and a half smooth rather high whorls. Whorls six, the anterior two and a half quadrately convex, the posterior ones becoming increasingly flatter. Last whorl sharply angled at the shoulder. Varices seven, elevated, stout, bluntly tuberculated at the shoulder; the posterior area has no liræ, but there are six stout squarose spiral liræ on the anterior portion. On the penultimate whorl there are eleven stout oblique rib-like varices, crossed by three thick equidistant liræ, one on the angulation and one near to the anterior suture.

Aperture quadrately-oval, abruptly contracted into a sinistrally arched, slightly recurved canal, about half the length of the aperture; outer lip thickened, obscurely dentate within.

Length, 8·5; breadth, 4·5; length of aperture and canal, 5.

Locality.—Table Cape, Tasmania (*R. M. Johnston !*).

27. Murex crassiliratus, *spec. nov.* Plate iii., fig. 5.

Shell similar to *M. alveolatus*, but the spiral liræ are thick, of which there are ten on the last whorl; the varices are more

elevated, four on the last whorl, obliquely continuous from whorl to whorl with an intermediate one on each of the following whorls.

Aperture oval, extending into a broad, open, nearly straight, slightly recurved canal, which is about as long as the aperture; margin of outer lip crenulated.

Length, 10; breadth, 5; length of aperture and canal, 6.

Locality—Upper beds at Muddy Creek (*J. Dennant !*)

28. Murex alveolatus, *spec. nov.* Plate iii., fig. 12.

Shell fusiform, spire moderately high of gradated whorls, terminating in a small blunt mamillate apex consisting of one and a half smooth whorls.

Whorls five and a half; those of the spire, excepting the apical ones, subquadrate, excavated at the suture. Varices squamose, narrow, except the last, which is moderately expanded, four on the last whorl, seven on the next two whorls.

The ornament consists of equidistant liræ. Tessellated by distant laminæ, squamosely elevated at the intersections. On the last whorl there are two liræ on the posterior slope, thence to the base six stouter ones, with intervening threads.

Aperture oval, lirate within, terminating in a short, recurved open canal.

Length, 8·5; breadth, 4·5; length of aperture and canal, 5.

Locality.—Lower beds at Muddy Creek.

This resembles a diminutive *M. irregularis*; but apart from the difference in the number of varices, the canal is short and the transverse ornament more regular and closer. From young examples of *M. irregularis* it differs by its narrow lanceolate outline, short canal, smaller apex, and by its cancellated ornament.

29. Murex tridentatus, *spec. nov.* Plate ii., fig. 2.

Shell ovate of five and a half whorls, with a mamillate apex of one and a half small smooth whorls. Spire whorls ventricose, shouldered; truncated on the periphery by two stout, almost contiguous liræ.

Last whorl convex, ornamented with rounded, depressed, spiral liræ, of which there are about six on the posterior slope, four stouter ones on the angulation, and ten on the basal area; it has five varices, and is transversely striated with lamellæ of growth.

Varices squamosely laminar, obsoletely nodulous, five on the last whorl, and eight on the penultimate whorl.

Aperture rotund; outer lip thickened, with three stout tubercles within; canal very short, sinistrally curved.

Length, 10; breadth, 6; length of aperture, 3·5; of canal, 2·5.

Locality.—Turritella clays, Aldinga Bay.

Genus Trophon.

SYNOPSIS OF SPECIES.

I. Shell small, elongate fusiform.
  Nuclear whorls almost unrolled, tip erect.
    Whorls angulated, transversely lamellate. 1. *T. polyphyllus.*
    Whorls angulated, plicate. 2. *T. brevicaudatus.*
    Whorls ventricose, apical whorls gradated. 3. *T. torquatus.*
  Nuclear whorls mamillate.
    Whorls transversely lamellate.
      Whorls convex; apex turbinate. 4. *T. icosiphyllus.*
      Whorls gradated; apex subcylindrical. 5. *T. hypsellus.*
    Whorls transversely plicate.
      Aperture variced; liræ on penultimate whorl six, unequal. 6. *T. monotropis.*
      No marginal varix; liræ 10, equal. 7. *T. mangelioides.*
II. Shell stout, oblong, purpuroid. 8. *T. anceps.*

SPECIES EXCLUDED.

T. succinctus, *T. Woods* is transferred to *Peristernia.*

1. Trophon polyphyllus, *T. Woods.*

Trophon polyphyllia, T. Woods. Proc. Lin. Soc., N.S.W., vol. iv., pl. ii., fig. 1, 1879.

Shell elongate fusiform, almost turriculate, thin, with a produced spire terminating in an acute apex composed of two and a half smooth rounded whorls, the extremity of which is erect.

Spire whorls three, excluding the nuclear ones, medially angular, and ornamented by numerous elevated lamelliform costæ (15 to 20 on the anterior whorl) which are raised into vaulted scales on the angulation of the whorl. On the penultimate whorl there is usually a spiral thread midway between the keel and the anterior suture, and often one at the suture which imparts a quadrate outline to this whorl.

The body whorl is roundly truncated in the middle, and is encircled with three stout threads; the lamellose costæ are continued on to the beak, the extremity of which is encircled with two threads.

Aperture roundly quadrangular; outer lip varicosely thickened and expanded, sometimes tuberculated within. Canal short, much curved to the left and reverted.

Length, 5·5; breadth, 2·5; length of aperture and canal, 2.

Locality.—Lower beds at Muddy Creek.

2. Trophon brevicaudatus, *spec. nov.* Plate ix., fig. 9.

Shell elongate, fusiform, almost turriculate, stout, with a produced spire, terminating in a subacute apex of two and a half smooth rounded whorls. Whorls below the apex, four, angularly curved in behind the anterior suture, and ornamented by narrow, angular, distant, subnodulose costæ, about 10 to a whorl; and by two strong liræ at the angulation and a thread at the anterior suture. Last whorl bluntly angled, faintly spirally lirate on the posterior slope; seven liræ on the rest of the surface extending to the beak; varicosely dilated behind the aperture; base abruptly contracted into a short, broad, slightly oblique and reverted beak. Outer lip thin, six-denticulated within.

Length, 6; breadth, 2·5; length of aperture and canal, 3.

Locality.—Lower beds at Muddy Creek.

3. Trophon torquatus, *spec. nov.* Plate vi., fig. 2.

Shell elongate, fusiform, with a produced spire, terminating in an apex of two and a half or three smooth gradated, rapidly tapering whorls, the extremity of which is erect, ; a thin erect lamella encircles the carina of the apical whorls. Whorls, three or three and a half, excluding the nuclear whorls, ventricose and shouldered; the earliest whorl with three spiral liræ on the anterior two-thirds, increasing to four on the penultimate, equidistant, of which the posterior one is not so stout as the rest. Last whorl ventricose, gradually attenuated in front, with about 10 encircling threads. On each whorl there are about 20 lamelliform costæ, which produce square depressions by intercrossing with the liraæ, where they are slightly squamosely elevated; on the body whorl, the costæ are continued on to the beak. Aperture varied; canal as long as the aperture.

Length, 8; breadth, 3; length of aperture and canal, 4.

Localities.—Turritella clays, Aldinga; and Adelaide bore.

4. Trophon icosiphyllus, *spec. nov.* Pl. ii., fig. 3.

Shell elongate fusiform, with a mamillate apex of one and a half whorls. Whorls four, excluding the embryonic ones, the two earlier whorls depressedly convex, costated; the penultimate whorl convex ornamented with five spiral liræ and about 20 lamelliform costæ, which undulate as they pass over the liræ and are sharply bent forward at the posterior suture.

Last whorl convex, gradually attenuated to the beak, with about 12 equidistant and equal encircling liræ, traversed by fimbriated lamellæ.

Aperture varicosely dilated; minutely tuberculated within the outer lip; canal shorter than the aperture.

Length, 7; breadth, 3; length of aperture and canal, 3·75.

Locality.—Adelaide bore.

Among living species this little fossil has considerable analogy with the European *T. Barvicensis* much more than to any Australasian species.

5. Trophon hypsellus, *spec. nov.* Pl. ii. fig. 1.

Shell elongate-ovate with a high gradated spire terminating in an elongate apex consisting of four smooth tumid whorls, regularly but rapidly diminishing in size, with a minute papillary extremity; whorls eight, those of the spire excluding the nuclear ones, convexly angular, bicarinate anteriorly. Last whorl ventricose with a narrow sloping area posteriorly, abruptly contracted into a short beak.

The spiral ornament consists on the spire whorls of two liræ; on the last whorl of one slender lira on the posterior slope, four stout liræ on the median portion, and four on the base.

The transverse ornament consists of about 16 lamelliform costæ to each whorl, which are raised into vaulted scales on the liræ, interstitial spaces between the costæ coincidently striated. The outer lip is varicosely thickened and expanded, and there is usually a second variceal development near to the columella margin and rarely a third on the penultimate whorl.

Aperture rhomboid, entire; outer lip varicosely thickened, five-tuberculated within. Canal very short and stout, open much curved sinistrally and reverted.

Length, 6; breadth, 3·5; length of canal and aperture, 3.

Localities.—Turritella clays, Aldinga Bay; and Adelaide bore (many examples).

In this species an approach is made to the genus *Triton*, through its two or three varices; but in its regular spire and general resemblance to the cohabitant species of *Trophon*, it may be better placed congenerically therewith. Its long subcylindrical apex is a striking specific mark of distinction, apart from the peculiarity of its variceal development.

6. Trophon monotropis, *spec. nov.* Plate iii., fig. 4.

Shell rather thin, elongate conical, with a high spire ending in a blunt rounded apex of two smooth whorls. Whorls four exclusive of the apical ones, convex or obscurely subquadrate; the last slightly tumid, with a rounded contracted base produced into a narrow sinistrally bent canal.

The transverse ornament consists of about 12 sharply-rounded costæ on each whorl and interstitial threads and striæ. On the body whorl the costæ are absent for some distance behind the aperture, and with the marginal varix are about seven in number. The spiral ornament consists of unequal threads, the more prominent of which rise into low blunt granulations in crossing the ribs; there are about five liræ on the penultimate whorl, of which four are more prominent than the rest. There are no proper varices except the broadly dilated one which margins the aperture.

Aperture oval, entire; outer lip thin in front of varix, four or five dentate within; inner lip thin, erect, smooth within. Canal narrow, bent a little to the left and slightly reverted, nearly as long as the aperture, almost closed.

Length, 9; breadth, 3·5; length of aperture and canal, 4·5.

Locality.—Clayey sands with green grains, Adelaide bore. (Sixteen examples.)

This species may not be a *Trophon*. The thin outer lip, not widely margined, removes it from *Murex*.

7. Trophon mangelioides, *spec. nov.* Plate x., fig. 11.

Shell thin, ovately fusiform, with a high spire ending in a blunt mamillary apex of two smooth whorls. Whorls four, exclusive of the apical ones, convex, but somewhat depressed round the upper part; the last somewhat tumid, with a rounded attenuated base, produced into a rather wide, long, twisted canal. The transverse ornament consists of about 12 stout, rounded, oblique costæ on each whorl; and the spiral ornament of equal and equidistant thin, elevated ridges, which are slightly thickened on the transverse ribs; there are about ten on the penultimate whorl, and those on the anterior part of the body whorl are broken up into granules.

Aperture elongate-oval; canal broad, twisted, and slightly reverted.

Length, 7·5; breadth, 3·75; length of aperture and canal, 4·5.

Locality.—Gastropod-bed of the River Murray Cliffs, near Morgan.

8. Trophon anceps, *spec. nov.* Plate ix., fig. 6.

Shell stout, oblong, biconical, with a high, subgradated spire. Whorls not less than five, posteriorly angulated and narrowly bicarinate in front; last whorl convex, with about 12 rounded costæ, encircled with about six principal liræ, which are cancellated with imbricating lamellæ. Aperture oval; outer lip regularly arched, its margin thin and wavy; canal short, somewhat compressed.

Length (incomplete), 19; breadth, 11; length of aperture and canal, 12.

Locality.—"Oyster banks," Aldinga Bay.

This purpuroid fossil is placed under *Trophon*, because of its close resemblance to the living *Purpura Flindersi*, Ads. and Angas, which Tryon has removed to *Trophon*, of which it has the characteristic operculum. From *T. Flindersi* it is distinguished by its elongate shape and rounded body whorl.

FAMILY PURPURACEA.

Genus Rapana.

1. Rapana aculeata, *spec. nov.* Plate ii., fig. 8.

Shell pyriformly ovate, thick; whorls eight, spire moderately elevated, terminating in an obtuse apex consisting of two smooth globose whorls.

Whorls angularly convex, anteriorly truncated and bicarinated; last whorl ventricose, roundly and narrowly truncated on the periphery, abruptly attenuated into a short broad beak.

The transverse ornament consists of plications and closely-set appressed lamellæ. The number of costæ on the body whorl is seven, on the median portion of which they are high and narrow, but evanescent on the base of whorl, and anteriorly they are ill-defined angular ridges. There are usually eight plications on each of the spire whorls (excluding the apical ones). The plications are raised into vaulted scales on the posterior angulation, and in young shells the scales are elongated, reverted, hollow spines.

The spiral ornament consists on the spire whorls of slender threads much obscured by the transverse lamellæ; but a few distant liræ are conspicuous on the medial portion of the body whorl. Aperture ovate, peristome continuous; outer lip somewhat flatly expanded anteriorly, lirately ridged within anterior to the carination of the whorl; inner lip erect, concave medially. Umbilical fissure margined by an elevated rounded keel.

Immature shells of about 30 millimetres are exceedingly like *Murex Eyrei*, and are imperforate; they may be distinguished by the larger pullus, the higher sloping posterior area of the whorls, and the few stouter liræ on the anterior part of the body whorl.

Length, 50; breadth, 34; length and breadth of aperture, 21 and 14; length of canal, 12.

Localities.—Blue clays at Schnapper Point and lower beds at Muddy Creek, Victoria.

Genus Purpura.

1. Purpura (Trochia) abjecta, *spec. nov.* Plate xii., fig. 8.

Shell stout, with a short spire and large ventricose body whorl, which is ornamented with linear encircling furrows, either crowded or irregularly disposed, or with narrow flat sulci as wide or wider than the flat liræ; at the base the linear furrows are increasingly distant. There are also obsolete transverse plications and lamellæ of growth. The aperture is large and oval, with a deep short oblique groove at the front; the outer lip is simple, but stoutly lirate within; columella broadly and deeply patulous. Height of body whorl, 35; breadth, 26; height of aperture, 27.

Locality.—Upper beds at Muddy Creek (*J. Dennant!*).

The material available for description is not only limited, but is imperfect; though, nevertheless, indicating a species allied to *P. textiliosa*, differing from it especially by the fine revolving liræ. The species is of interest as the sole representative of the genus in the older tertiary strata of Australia.

Genus Vitularia.

1. Vitularia curtansata, *spec. nov.* Plate vi., fig. 4.

Shell rather thin, biconical, ventricose, oval. Whorls five, rather convex, impressed at the suture. Last whorl ventricose, gradually attenuated anteriorly into a short blunt canal.

Spire whorls ornamented with about six stout, rounded, scaly, spiral ribs, that next but one to the anterior suture a little stouter than the rest, and producing a slight angulation of the whorl; the alternating furrows are deep, narrower than the ribs. The transverse ornament consists of about 10 inconspicuous plications. Body whorl with about 20 unequal spiral ribs.

Aperture pyriform, straight; peristome thinly continuous; inner lip patulous, slightly arched to the origin of the straight pillar, with a thin edge parting the aperture from the umbilical fissure; outer lip smooth within. Canal very short, wide, and truncated.

Length, 12; breadth, 8; length of aperture and canal, 7.

Locality.—Lower beds at Muddy Creek.

Genus Ricinula.

1. Ricinula subreticulata, *spec. nov.* Plate xii., fig. 7.

Shell small, acutely ovate, biconical, rather thick. Whorls five, those of the spire nearly flat, slightly angular, and nodulate over the anterior suture; last whorl nodosely carinated, and somewhat narrowly truncated in the middle.

The ornament consists of stout spiral threads, narrower than the flat intervening sulcations, and of transverse stout striæ, which form shallow pitted square interstices by the intercrossing of the liræ.

The number of nodulations on the body whorl is six, increasing to eight on the penultimate. The spiral liræ on the posterior slope of the body whorl are four or five in number, and about ten anteriorly.

Aperture large, oval; outer lip externally simple and subangulated medially, internally with seven stout liræ; canal very short, wide, and truncated.

Length, 9·5; breadth, 6; length of aperture and canal, 5.

Locality.—Upper beds at Muddy Creek.

The living analogue of this species is *Purpura reticulata*, Quoy and Gaimard, inhabiting Southern Australia, from which it differs by the stronger spiral costulation, more open cancellation, stouter tubercles, by the greater breadth of the last whorl, which is somewhat abruptly contracted into the beak, and consequently by the more angulated aperture. In the living species the last whorl gradually tapers anteriorly, and the internal liræ on the outer lip are not so strongly developed as in the fossil.

SPECIES EXCLUDED.

R. purpuroides, *Johnston*, is transferred to *Pisania*.

FAMILY TRITONIDÆ.

Genus Ranella.

1. Ranella Prattii, *T. Woods.* Plate vi., fig. 6.

Triton Prattii, T. Woods, Proc. Lin. Soc., N.S.W., vol. iii., p. 223, t. 21, f. 15, 1878.

Shell ovate, conical, very contracted at the base into a short, recurved, somewhat twisted snout. Apex obtuse, consisting of two and a half polished, rounded, rapidly-increasing whorls. Whorls six, exclusive of the embryonic whorls, compressed, ventricose, rounded, with a deep narrow undulated suture, of regular increase; but the last is disproportionately large, its base is rounded but contracted, and a little flattened towards the beak. Varices in two rows, one on each side, slightly imbricating in each row, almost continuous and axial, convex, compressed, and elevated. Posterior whorls tessellated by transverse costulæ and spiral liræ; on the anterior whorls the intervariceal transverse plications are gradually reduced in number, and finally to four. On the body whorl the spiral ridges are six in number, equal and equidistant, with five or more flat threads in the interspaces, cancellated by transverse raised lines.

Aperture oval, rather small, perpendicular; peristome continuous; outer lip, its nearly semicircular curve angulated by the projection of the six stouter liræ; inner lip slightly but narrowly spreading, with two or three inconspicuous callosities near its junction with the pillar.

Length, 29; breadth within the varices, 20; length of aperture 9, of canal 7.

Localities.—Lower beds at Muddy Creek; blue clays at Schnapper Point; and "Gastropod bed" of the River Murray Cliffs, near Morgan.

Triton Prattii was founded on immature specimens of what proves to be a *Ranella*, belonging to the subgenus *Argobuccinum*, characterised by an elevated spire, short beak, and the absence of a posterior canal; and I have thought it needful to describe and figure an adult example. The species is related to *R. bitubercularis*, Lamarck, of the Indo-Pacific region, from which it differs by being multicostated and not bi- or trituberculated between the varices.

Genus Triton.

SYNOPSIS OF SPECIES.

I. Body whorl with a sharp keel, crenately-serrated on the margin.

Ovate; body whorl with an anterior row of serratures.
Intervariceal serratures, 6; posterior slope cancellated. 1. *T. Abbotti.*
Intervariceal serratures, 6; posterior slope smooth. 2. *T. radialis.*

Ovate; body whorl without a second row of serratures.
Spire whorls flat or slightly imbricating at the suture; liræ smooth. 3. *T. gibbus.*
Spire whorls with a narrow anterior slope; liræ granulose. 4. *T. cyphus.*

Elongate; body whorl with an anterior row of serratures, intervariceal serratures 6, blunt. 5. *T. Woodsii.*
Elongate; body whorl without a second row of serratures, intervariceal serratures 5, cuneate. 6. *T. textilis.*

II. Body whorl subquadrate, nodulate on the keels; shell ovately fusiform.

Three rows of tubercles; posterior rows with slender oblique costæ. 7. *T. intercostalis.*
Two rows of tubercles; seven intervariceal tubercles on the posterior angulation. 8. *T. annectans.*
Tubercles of the two rows confluent, four between the varices. 9. *T. armatus.*

III. Body whorl convex, without costæ, nodulate on the periphery.

Shell ovate, one row of nodulations, moderately ventricose; liræ flat, granular. 10. *T. ovoideus.*

Gibbous; liræ elevated, undulous. 11. *T. tumulosus.*

Shell ovately fusiform, three rows of nodulations on body whorl. 12. *T. tortirostris.*

Shell elongate-fusiform, feebly angled and nodulate at the periphery. 13. *T. protensus.*

IV. Body whorl convex, costated.

Shell elongate-fusiform, six intervariceal costulations. 14. *T. cribrosus.*

Shell elongate-ovate, five or six stout, high, intervariceal costæ. 15. *T. crassicostatus.*

Shell subturreted.

Intervariceal costellæ, 10; primary liræ on last whorl, 6. 16. *T. oligostirus.*

Intervariceal costellæ, 15; liræ, 16. 17. *T. gemmulatus.*

Intervariceal costæ, 10; primary liræ, 4. 18. *T. Quoyi.*

Intervariceal costæ, 6; liræ, 4. 19. *T. sexcostatus.*

SPECIES EXCLUDED.

T. Prattii, *T. Woods*, is transferred to *Ranella.*

T. Tasmanica, *R. M. Johnston*, is transferred to *Epidromus*.

1. Triton Abbotti, *T. Woods.*

T. Abbotti, Tenison Woods, Proc. Roy. Soc., Tasm., for 1874, t. 1, f. 8, p. 24.

Shell elongately-ovate; spire high, slightly distorted, terminating in a subcylindrical obtuse apex, consisting of four and a half polished, rounded, faintly lirate, and transversely striated whorls. Whorls five and a half, excluding the nuclear whorls, carinated and tuberculated on the keel; spirally lirate and transversely distantly striated; the liræ obscurely flatly granulated, unequal.

Varices at about four-fifths of a whorl, tuberculated at the carination.

Body whorl triangulated, the posterior carination with six large wedge-shaped intervariceal tubercles, the anterior angulation with about five small intervariceal tubercles, becoming smaller and finally obsolete towards the marginal varix.

Aperture ovate; outer lip denticulated within; inner lip thin, reflected over the columella, with small transverse corrugations. Canal not quite so long as the aperture; very much reverted.

Length, 55; breadth, 30; length of aperture and canal, 29.
Locality.—Table Cape (*Hobart Museum!* and *R. M. Johnston!*)

2. Triton radialis, *spec. nov.* Plate v. fig., 8.

Shell acutely ovate, with a high, sloping, distorted spire terminating in an acute apex, consisting of two polished whorls, the anterior one slightly shouldered, or bicarinate, the posterior whorl ends in a blunt, short, erect, lateral point. Whorls five, excluding the nuclear whorls, flat, angulated over the anterior suture; the carination broadly and deeply crenate-dentate. The surface ornamented with spiral threads, increasing from six on the posterior slope of the earliest whorl to about 30 on that of the body whorl, but at the same time they gradually diminish in strength, until they are barely visible to the unaided eye. Base of the body whorl similarly sculptured, but with two strong liræ, and three or four on the beak.

Varices at about four-fifths of a whorl, deeply and broadly crenately-serrated at the carination. There are four or five large intervariceal serratures on the posterior carination, and three smaller ones on the anterior carina of the body whorl, becoming obsolete at half the length between the varices. Aperture ovate; outer lip lirate within; inner lip thin, erect, lirate within, beak shorter than the aperture, abruptly bent to ehe right, and reverted.

Length, 40; breadth, 28; length of aperture and canal, 24.

Locality.—"Gastropod-bed" of the River Murray cliffs, near Morgan.

This Murray fossil might at the first glance be taken for *T. Abbotti*, but it has fewer and larger tubercles, which produce a greater distortion of the spire, whilst the posterior slope is much broader and very feebly lirate and not cancellate on the last whorl, which is moreover not at all or but feebly biangulated; the shell is proportionately wider, the canal shorter, and the apex is very different.

3. Triton gibbus, *spec. nov.* Plate v., fig. 9.

Shell biconical, with a short distorted spire of flat whorls, imbricating and crenately-dentate at the suture. Last whorl bisected by a very high, sharp, crenately-dentate keel, with a precipitous anterior slope, and the base contracted into a broad, twisted, and reverted beak.

Whorls five (excluding two smooth apical ones ending in a laterally-elevated, obliquely-truncated point), with a varix at about four-fifths of a whorl, much depressed or almost concave for the anterior third of each intervariceal space. Intervariceal crenulations five, confined to the posterior two-thirds of

the space, whilst the anterior one-third is encircled with a series of small bifid granulations.

The ornament consists of flexuous slender spiral threads, crossed by close fine striæ. The encircling threads are alternately large and small, those on the base of the last whorl, and especially towards the marginal varix, are broken up into elongate granules. Aperture rhomboid; outer lip lirate dentate within; inner lip thinly spread over the columella, which shows a strong curved fold at its junction with the canal.

Length, 35; breadth, 25; height of aperture, 14; length of canal, 10.

Localities.—Blue clays at Schnapper Point; and lower beds at Muddy Creek.

This remarkable gibbous species has the same general characters of *T. textilis*, from which it differs in shape, more trochiform spire, shorter canal.

4. Triton cyphus, *spec. nov.* Plate v., fig. 11.

This is another gibbous species, differing from *T. gibbus* by its subscalar spire-whorls and its stout, broad, crenately-granulated, spiral liræ. On the base of the last whorl the principal liræ are about eight in number, the posterior one of which is a little stronger than the rest, and have two, three, or four slender threads in the interspaces. There is no columella fold as in *T. gibbus*.

Length, 39; breadth, 25; height of aperture, 16; length of canal, 8.

Localities.—Lower beds at Muddy Creek; blue clays at Schnapper Point.

5. Triton Woodsii, Tate. Plate v., fig. 4; Var. pl. v., fig. 6.

T. Woodsii, Tate, Proc. Lin. Soc., N.S.W., vol. IV., p. 15; t. 3, f. 1-2; 1879.

Elongate fusiform, with a much produced conical spire; apex acute of two and a half whorls, the anterior one angular, the next rounded and very narrow, terminating in an acute curved lateral point. Whorls six, excluding the apical ones, sharply angulated medially, but rather flatly depressed behind each varix; keel with six bluntish tubercles between the varices. Varices rather broad, convex axially, without tubercles, ornamented as the rest of the surface, situated at about four-fifths of a whorl.

Last whorl somewhat tumid, biangulated; the anterior keel with six rounded small tubercles, which become obsolete towards the marginal varix.

Surface ornamented with numerous slender spiral threads, for the most part, equal and equidistant; cancellated by close,

fine, raised lines. There are about 20 liræ on the posterior slope of the last whorl, of which one median and one or two near the suture are stouter than the rest, and irregularly granulose; the anterior part is similarly ornamented.

Aperture quadrately oval; outer lip tuberculate within: inner lip erect, with a tubercle at the point of the pillar, to which is opposed a stout tubercle on the outer lip; canal long, much recurved.

Length, 37; breadth, 17; length of aperture 9, of canal 12.

Locality.—Lower beds at Muddy Creek.

T. Woodsii was founded on an immature example, which does not so characteristically represent the species as the adult specimen which is here figured.

Var.—The specimens from the River Murray Cliffs and Schnapper Point are much larger, and the liræ usually more granulated. Length 50, breadth 26, length of aperture 18.

6. Triton textilis, *spec. nov.* Plate v., fig. 12.

Elongate-fusiform, with a much produced conical spire; apex acute of three rounded lirate whorls, ending in an acute upward-curved point.

Whorls six, excluding the embryonic ones, with a high antemedian serrate-dentate carination; but much depressed behind each varix, and with the sudden enlargement in front of it there is produced considerable distortion of the spire. Last whorl medially angulated, with an almost precipitous slope anteriorly.

Surface ornamented with numerous (about 30 on the posterior slope of last whorl) flat, equal, spiral threads, with a little wider interspaces, cancellated by close, fine, raised lines.

Varices rather broad, concave axially, rather acute, without tubercles, and ornamented as the rest of the surface, situated at about four-fifths of a whorl. The intervariceal nodulations vary from six to eight, decreasing in size anteriorly.

Aperture oval; outer lip with a sharp, minutely-wrinkled margin, with an inconspicuous dentate, with ridge within, abruptly terminating at the canal; inner lip erect, with a few corrugations anteriorly, and a small tubercle at the point of the pillar. Canal long, much recurved.

Length, 37; breadth, 20; length of aperture and canal, 22.

Localities.—Blue clays at Schnapper Point; and lower beds at Muddy Creek.

This species very much resembles *T. Woodsii*, but is more distorted, the whorls more angularly elevated, by the absence of an anterior carination on the body whorl, and by the more numerous spiral liræ.

7. Triton intercostalis, *spec. nov.* Pl. ix., fig. 5.

Shell elongate-ovate; whorls, five (apex unknown), the earlier ones, convex, with five principal granulose liræ, finely reticulated in the furrows; the anterior ones bicarinated and tuberculated and reticulated all over.

Last whorl roundly truncated medially, and abruptly attenuated into a stout, long, twisted beak; the whole surface closely reticulated by transverse raised lines and stronger spiral liræ. The medial part is encircled with three equi-distant, tuberculated keels; the posterior one is the stoutest, and the anterior one, which is the weakest, is in an alignment with the posterior angle of the aperture. The tubercles of the two posterior ones are confluent, and are continued backward as a narrow arched costulation to the suture; the intercostal space is occupied by two similar costulations, ending anteriorly at a strong subnodulated thread which bisects the posterior slope. The basal part of the last whorl has two equi-distant, strong, granular liræ.

Varices narrow, rather broadly expanded, crenulated on the margin, at three-fifths of a whorl. The inter-variceal nodulations are seven in number on the two posterior rows, and ten on the anterior row.

Length, 43; breadth, 28; length of aperture, 17; of canal, 10.

Locality.—Lower beds at Muddy Creek (*J. Dennant!*)

This species is very distinct through its obliquely costated posterior slope and the unusually narrow intervariceal areas.

8. Triton annectans, *spec. nov.* Pl. v., fig. 3.

Shell resembling *T. cyphus* with the whorls medially subangular, spire less distorted and higher, last whorl subquadrate, encircled with two rows of nodulations. The nodulations on the posterior angulation are large, seven on each intervariceal space, but diminishing in size anteriorly; the eleven nodulations on the anterior angulation are small, though conspicuous, equal sized and regular disposed. Posterior slope of last whorl with about twelve irregular encircling liræ, the larger ones more or less granulose.

Length, 38; breadth, 21; length of aperture, 14·5; of canal, 9·5.

Locality.—Lower beds at Muddy Creek.

9. Triton armatus, *spec. nov.* Plate v., fig. 3.

Ovate-elongate; whorls five and a half (apex not known), carinated and acutely nodulose, equally spirally lirate; liræ thin, depressed, about ten on the posterior slope and five on the front of the penultimate whorl. Varices broad, high, and spinosely nodulate on the carination.

Last whorl ventricose, narrowly truncated and bicarinated at the periphery, with four intervariceal nodulations, those of the anterior row confluent with the corresponding ones behind, and continued backward as oblique, broad undulations, becoming evanescent before reaching the suture. Base with a strong encircling thread, equidistant with the two carinations.

Aperture oval; outer lip smooth within, flatly and narrowly expanded, continuous with the smooth inner lip which is broadly reflected over the columella; aperture contracted in front by a columella fold, and a stout ridge opposed to it on the outer lip. Beak with a very broad depressed base, twisted and reverted.

Length, 41; breadth, 24; length of aperture, 13; of canal, 12.

Locality.—In a well sinking in the Murray Desert.

This species is not much unlike *T. annectans*, but differs by the shape and fewness of the intervariceal nodulations.

10. Triton ovoideus, *spec. nov.* Plate ix., fig. 4.

Shell ovate, with a short, broad, conical spire; apex obtuse? Whorls four (incomplete), rounded, slightly angled at the anterior suture, and furnished at the angulation with six small rounded intervariceal nodulations; encircled throughout with flattened beaded ridges, alternating with very narrow simple threads. Varices six, at about four-fifths of a whorl, rounded, convex axially, and ornamented as the rest of the surface.

Columella arched, furnished with an obliquely axial, elongate callosity at the posterior angle, and with tooth-like ridges at the front.

Canal very short, much bent to the right, and slightly reverted. Outer lip thickened, with seven strong denticulations within, the anterior one much larger than the rest.

Length, 23 (estimated, 24·5); breadth, 14; length of aperture and canal, 14.

Locality.—Upper beds at Muddy Creek (*J. Dennant!*).

A species exceedingly like *T. Bassi*, Angas, but conspicuously distinct by its broader and fewer (about half the number) liræ, and consequently by the fewer and stouter denticulations on the outer lip; moreover, the spire whorls are more angular, the nodulations smaller; the aperture is oblique, and the canal more twisted.

11. Triton tumulosus, *spec. nov.* Plate v., fig. 2.

Shell ovately conical, with a moderately high distorted spire of subgradated whorls. Apex of two polished whorls; the anterior one is high, bicarinated, and transversely striated; the posterior one, encircling a shallow concavity, at first sud-

denly narrowed, then somewhat depressedly dilated, and ending in a blunt appressed point.

Whorls five, excluding the embryonic ones, convex, rather tumid in front of and depressed behind each varix; ornamented with a median row of stout granulations, anterior to which are three very broad, rounded, nodately undulose encircling ridges, and two similar ones at the front, with a stout thread in each interspace; the whole surface traversed by close-set striæ.

Last whorl ventricose, with numerous liræ alternately stout and slender on the anterior portion, the primary liræ with distant, elongate, depressed granules.

Varices at four-fifths of a whorl crenulated by the liræ; intervariceal nodulations seven.

Aperture ovate; outer lip lirate; inner lip corrugated, slightly angulated in front; canal of moderate length,* shorter than the aperture, oblique, and strongly reverted.

Length, 42; breadth, 24; length of aperture, 15; of canal, 10.

Localities.—Lower beds, Muddy Creek; blue clays, Schnapper Point.

T. tumulosus has a general resemblance to *T. cyphus*, but differs in shape of whorls and in the spiral ornament. Among living species it has some affinity with *T. subdistortus*, from which it differs by its shorter spire, long canal, and the gross spiral sculpture.

12. Triton tortirostris, *spec. nov.* Plate v., fig. 7.

T. minimum, Tenison Woods, Proc. Roy. Soc., Tasm., for 1876, p. 107 (non Hutton).

Shell ovate, with a high conical distorted spire; apex globose of four rounded whorls, ending in a very small depressed tip. The anterior whorl is obtusely angled above and medially, and is transversely striated.

Whorls six, excluding the apical ones, rounded, obscurely angulated and tuberculated; last whorl rather tumid, abruptly contracted at the base into a broad, short, dextrally bent and reverted beak. The last whorl in young specimens is narrowly truncated on the periphery.

Surface ornamented with unequal, depressed, spiral liræ, broken up into elongate granules and transverse striæ; there are from six to eight liræ on the posterior slope of the spire whorls. Varices rather broad, convex axially, without tubercles, the liræ which pass over them are granulated at the intercrossing by strong transverse threads; situated about four-fifths of a whorl.

The periphery between the varices on the last whorl with a

*The canal of the figured specimen is incomplete.

row of five trifid nodulations; the anterior row, which is in an alignment with the posterior angulation of the aperture, is weaker and separated by a wider interspace than that which intervenes between the two equal and posterior ones; base with two inequidistant strong subnodulous liræ.

Aperture oval, oblique; outer lip with a sharp erect margin, denticulate within; inner lip broadly reflected on the columella, smooth, with an oblique anterior fold and bearing three denticles at the end.

Length, 49; breadth, 27·5; length of aperture, 17; of canal, 11.

Localities.—Blue clays at Schnapper Point; in the lower beds at Muddy Creek; and gastropod-bed of the River Murray-cliffs, near Morgan; Table Cape (*R. M. Johnston!*)

This species though partaking somewhat of the general form of *T. Woodsii* is readily separable by its rounded apex, trifid nodulations, in which latter character it approaches *T. intercostalis*, but is otherwise very different.

T. minimum, Tenison Woods, was established on a specimen of 11 mills. long. This I have had under observation, as also another example of 18 mills. in length. Both agree perfectly with the young of corresponding size of *T. tortirostris*. As the specific name had already been employed by Hutton in 1873 for a dissimilar New Zealand fossil, I have imposed a new designation.

I cannot concur with the opinion of Prof. Hutton, Proc. Lin. Soc., N.S.W., p. 481, 1886, that this species, Murray-examples of which under the M.S. name of *T. pseudospengleri* had been examined by him, is the same as *T. minimus*, Hutton, of which I have before me authentic specimens.

13. Triton protensus, *spec. nov.* Plate v., fig. 10.

Shell turriculate-fusiform; apex obtuse, of about two narrow smooth whorls, of which the posterior one at first overhangs the other, thence rapidly attenuated to a small incurved depressed point. Whorls five, excluding embryonic ones; the earlier ones flatly convex; the last one and a half whorls feebly angulated medially, and there feebly nodulated.

The ornament consists of flat narrow spiral threads, with wider interspaces, cancellated by moderate closed slender threads, producing on the earlier whorls minute granulations at the intersection. Varices at about four-fifths of the whorl, broad, elevated, ornamented as rest of the surface; the intervariceal nodulations five in number. Outer lip feebly denticulated within; base of the columella with a few corrugations; canal as long as aperture, reverted.

Length, 29; breadth, 11; length of aperture and canal, 16.

Locality.—Lower beds at Muddy Creek.

This species is more lanceolate than *T. Woodsii*, with convex whorls; though having the same form of ornament, it has the anterior convexity of the last whorl uninterrupted, and the nuclear whorls are different.

14. Triton cribrosus, *spec. nov.* Plate v., fig. 5.

Shell elongate-fusiform, with a very high, gradually attenuated spire of eight gradated whorls, terminating in an apex of two an a half rounded whorls, with a very small mamillate tip, the anterior whorl globose and finely spirally lirate.

Spire whorls, excepting nuclear ones, convex, narrowly truncated at the periphery by two stout flat ridges, and the posterior slope broader and less abrupt than the anterior slope; a moderately strong post-medial ridge encircles the posterior slope, and there is a similar one at the anterior suture. The concave interspaces are encircled each with two or three similar but smaller threads. The whole surface crossed by thin, six or seven, intervariceal costulations which are knotted at the junctions with the liræ, and distantly transversely striated.

Varices at about four-fifths of a whorl, compressed, rather high, with four broad crenate-serratures.

Last whorl quadrately convex, somewhat rapidly attenuated into a long, slightly curved and reverted beak; feebly costulated on the base. Outer lip sulcated within; inner lip thinly and narrowly adpressed over the columella; columella slightly arched, with an oblique ridge terminating at the point of the pillar. Canal as long as the aperture, rather narrow, slightly bent to the right, and reverted.

Length, 34; breadth, 15; length of aperture and canal, 18·5.

Locality.—Clayey green-sands, Adelaide bore.

15. Triton crassicostatus, *spec. nov.* Pl. xi., fig. 4.

Shell elongate-ovate, with a moderately high regular spire of eight gradated whorls, ending in a mamillate apex of about four rounded smooth whorls, with the tip very small and slightly exsert.

Spire whorls (excepting nuclear ones) of regular rapid increase, slightly concave at the shoulder, angulated at the keel, with a very slight contraction towards the anterior suture. Ornamented with about ten equidistant flatly rounded liræ; the intervening much broader furrows closely and sharply transversely striated. The transverse ornament consists of six intervariceal costæ, which are raised into blunt serratures on the keel; the varices are compressed, elevated, crenulated on the margin, situated at two-thirds of a whorl.

Last whorl convexly quadrate, very much contracted at the base; with five intervariceal costæ, thick and high at the periphery, evanescent on the base; base with two prominent equidistant liræ, and intervening threads. The liræ on the last whorl are more or less granulated, especially towards the marginal varix and base.

Aperture sub-rotund; peristome continuous; the almost semicircular sharp outer lip slightly interrupted by the projection of the four principal liræ, obscurely denticulated; inner lip erect, with a sharply twisted columella plait at the base. Canal incomplete, apparently sharply bent and reverted.

Length, excluding canal, 24; breadth, 15·5; length of aperture, 9.

Locality.—Table Cape, Tasmania (*R. M. Johnston !*)

This species has some resemblance to the young of *T. Spengleri*, but the whorls are more angulated, and the transverse ornament is different.

16. Triton oligostirus, *spec. nov.* Plate vi., fig. 7.

Shell elongate-oval; apex mamillate of two and a half small rounded whorls, the tip depressed. Whorls eight, convex, with six principal encircling liræ, feebly costated transversely (ten between the varices); the intercostal spaces are latticed by the intercrossing of spiral threads and stout, distant, elevated striæ; the costæ are feebly granulose, but more conspicuously on the two median and on the posterior of the principal liræ.

Last whorl ventricose, with a rounded base; spirally lirate, and tessellated all over. The costæ are slender, arched, and do not extend on the base, feebly nodulo-granulate; base with two or three principal liræ, which are broken up into elongate, flat granules.

Outer lip toothed; columella denticulated at the front.

Length, 17·5; breadth, 9.

Localities.—Adelaide bore; and Turritella-clays, Aldinga Bay.

This is another species of the Quoyi-group, from which it is distinguished by the numerous spiral liræ, slender costæ, and tessellated ornament.

17. Triton gemmulatus, *spec. nov.* Plate vi., fig. 8.

Shell turriculate, with a distorted spire of seven convex whorls, ending in a large blunt apex of two and a half smooth whorls, with a tip very small and rather depressed. Spire whorls (excepting the apical ones) irregularly convex, being ventricose in front of, and nearly flat behind, each varix; ornamented with about 16 unequal liræ, of which there are two

prominent ones on the periphery, crossed by about 15 faint intervariceal costulations which bear bead-like granulations at the intersections; the intercostal spaces distantly transversely striated.

Varices eight, at intervals of about four-fifths of a whorl, stout, broad, crossed by the liræ, and axially striated.

Last whorl convex, with a rounded base contracted into a short twisted beak; ornamented same as that of the spire, except that the transverse striations cut up the surface of the liræ into small granulations.

Aperture subrotund, entire; outer lip with an acute crenulated margin, lirate within; inner lip reflected, smooth, with an oblique fold at the front.

Length, 13; breadth, 6; length of aperture, 4; of canal, 2.

Locality.—Lower beds at Muddy Creek.

This fossil belongs to a group typified by the recent *T. Quoyi*, Reeve, but it is more slender, has a larger apex, finer ornament, longer canal, and a smooth inner lip.

18. Triton Quoyi, *Reeve.*

T. Quoyi, *Reeve*; monograph of Triton

This species, so common on the southern shores of Australia, is known to me as a fossil by several specimens from the upper beds of the Muddy Creek section

19. Triton sexcostatus, *spec. nov.* Plate vi., fig. 9.

Turriculate; whorls nine, ending in a small obtuse apex of two rounded whorls; spire whorls convex, the earlier ones subquadrate, ornamented with four spiral ribs, acutely nodulated by the intercrossing of transverse costæ, of which there are six between the varices. Outer lip prominently toothed; columella with three rounded tubercles.

Length, 21; breadth, 9·5,

Locality.—Oyster banks at Blanche Point, Aldinga Bay.

This fossil closely resembles *T. Quoyi*, from which it is conspicuously different by its larger, fewer, and more distant intervariceal costæ, which number in the recent species from 10 to 11, whilst there are invariably six on the fossil.

Genus Epidromus.

SYNOPSIS OF SPECIES.

Whorls equally attenuated in front and behind.

Surface granulated all over by the intersections of equal and equidistant liræ (12) and costæ.

1. *E. tenuicostatus.*

Liræ 14, rather unequal, closer together than the costæ; nodular-granulose on the larger liræ.
2. *E. nodulatus.*

Liræ six; costæ wide apart; granulose; apex hemispheric. 3. *E. Tasmanicus.*

Costæ simple, interstices spirally striated.
4. *E. citharellus.*

Surface cancellated, but not granulated.
5. *E. leptoskeles.*

Whorls shouldered, especially the earlier ones.

Intercostal spaces rugosely striated; apex large, hemispheric. 6. *E. texturatus.*

Intercostal spaces microscopically striated; apex subcylindrical. 7. *E. turritus.*

1. Epidromus tenuicostatus, *T.-Woods.* Plate vi., fig. 12.

Pisania tenuicostata, Tenison-Woods, Proc. Lin. Soc., N.S.W., vol. iii., p. 224, t. 20, f. 6, 1878.

Shell elongate-fusiform; whorls eight, convex; nuclear whorls two, smooth, shining, ending in a very small suberect papillary tip; the third or fourth whorls shining, ornamented with slightly flexuous crowded transverse ribs; the rest of the whorls cancellated by equal and equidistant transverse and spiral ribs, stoutly granulose at the intersections. About 40 transverse ribs on the last whorl, and about 12 spiral ribs on the penultimate whorl.

Varices eight, somewhat irregularly disposed, broad, crenulated on the margin.

Aperture narrowly oblong; canal very short, slightly twisted and reverted; outer lip dentate lirate within; inner lip reflected on the columella, smooth.

Length, 15; breadth, 5; length of aperture and canal, 6·5.

Localities.—Lower beds at Muddy Creek; gastropod-bed of the River Murray Cliffs, near Morgan.

The examples from the latter locality offer such differences from the type as to suggest a distinct species; in them the third whorl from the summit is prominently ventricose, producing a turbinate apex, and the transverse ribs on it are stout and wide apart.

2. Epidromus nodulatus, *spec. nov.* Plate vi., fig. 11.

Shell turriculate; whorls seven and a half, moderately convex; nuclear whorls one and a half, globose, smooth, with the tip immersed. Ornamented with somewhat unequal revolving liræ (14 on the penultimate whorl) and narrow, rounded, curved, transverse riblets (about 22 on the penultimate whorl); the riblets are narrower than the interspaces, which are transversely striated, and are slightly nodulate at the intersections

with the liræ. Varices nine, compressed, elevated, transversely striated, and crenulated by the liræ which pass over them.

Aperture narrowly oblong; outer lip lirate within, liræ continued to the margin, which is crenulate; inner lip widely expanded and subreflected.

Length, 19; breadth, 7; length of aperture and canal, 8.

Locality. — Clayey green-sands, Adelaide bore. Three examples.

3. Epidromus Tasmanicus, *Johnston.* Plate xi., fig. 11.

Triton Tasmanicus, R. M. Johnston, Proc. Roy. Soc., Tasm., for 1879, p. 33.

"Shell narrow, turreted, with elevated spire, and round blunt apex; whorls eight, cancellated and ornamented with about 24 fine riblets and two broad round distant varices on each whorl, which become slightly granulose at points where intersected by the more faintly raised regular carinæ, six of the latter visible on the upper whorls; interspaces, varices, carinæ, and riblets finely transversely striate throughout; aperture entire, ending in a short canal; outer denticulate interiorly. Long. about 22 mil., lat. 8. Table Cape."—R. M Johnston.

This species is only known by the unique specimen and now, unfortunately, much reduced in size by fracture, which I have figured. However, from what is left of it, and from the description drawn up before mutilation, it is clear that it is an *Epidromus* and specifically distinct from its congeners in the Australian Tertiary beds. The large hemispheric apex with its depressed tip is comparable only with that of *E. texturatus*, whilst its rounded whorls and simpler ornament distinguish it.

4. Epidromus citharellus, *spec. nov.* Plate iv., fig. 6.

Shell turriculate; whorls six (apex unknown), nearly flat, ornamented with thin, elevated, slightly curved, transverse costæ (16 on the last whorl), the much wider concave interspaces distantly spirally striated; varices eight, irregularly disposed; outer lip lirate within.

Length, 18; breadth, 5·5; length of aperture and canal, 7·5.

Locality.—Lower beds at Muddy Creek *(J. Dennant!)*

5. Epidromus leptoskeles, *spec. nov.* Plate iv., fig. 10.

Shell with a narrow lanceolate outline of eight whorls; surface ornamented with slightly curved numerous transverse flat ribs. The wider interspaces are divided into oblong depression by regular, thick spiral lines. In other respects the species is like *E. tenuicostatus*.

Length, 14; breadth, 14.

Locality.—Lower beds at Muddy Creek (*J. Dennant!*)

6. Epidromus texturatus, *spec. nov.* Plate vi., fig. 10.

Shell ovately-turreted; whorls nine and a half of regular increase, terminating in a large hemisphæric apex of two and a half rapidly decreasing whorls, the tip hardly depressed. The first whorl is smooth, the next is ornamented with flexuous radial ribs; the rest of the whorls rounded, but flattened behind, ornamented with revolving threads and curved costulations, spinosely granulated at the intersections; the intercostal spaces closely rugosely striated in the axial direction, and spirally by rounded threads with linear interstices. There are six liræ on the penultimate whorl, none on the posterior slope, which diminish in strength towards the anterior suture; and 40 to 50 costulations on the penultimate whorl, reduced to 30 on the body whorl.

Varices nine, broad, somewhat depressed.

Outer lip shortly lirate within; inner lip narrow, smooth.

Length, 37; breadth, 14; length of aperture and canal, 17.

Localities.—Blue clays, Schnapper Point; lower beds at Muddy Creek (*J. Dennant!*).

The specimen from the latter locality has thicker spiral ribs and larger tubercles, especially those of the posterior rib, which imparts a more quadrate outline; the costulations on the last whorl are fewer.

7. Epidromus turritus, *spec. nov.* Plate iv., fig. 4.

Shell turriculate, whorls eight, terminating in a blunt apex of two smooth subcylindrical whorls much smaller than the regular whorls; the third and fourth whorls bicarinate, the rest of the spire whorls angulated and shouldered, and much contracted towards the anterior suture; body whorl regularly and moderately convex, proportionately narrower than penultimate whorl, gradually attenuated into a broad, short, reverted beak. Ornamented with narrow, flat, spiral threads (five on the posterior slope of the penultimate whorl, 18 on the anterior portion, two of which, one on the keel, and one nearly medial, are stouter than the rest), crossed by costulæ (about 30 on the penultimate whorl), which are spinulose-granulated at the intersections; intercostal spaces closely, finely, tranversely striated.

Varices three, confined to the anterior whorls, inconspicuous, having the form of lamellate imbrications.

Outer lip with numerous, short, slender ridges within; inner lip narrowly reflected, smooth.

Length, 27·5; breadth, 9; length of aperture and canal, 13.

Localities.—Lower beds at Muddy Creek (*J. Dennant!* and *J. B. Wilson!*); blue clays at Schnapper Point (*R. T.*).

FAMILY FUSIDÆ.

Genus Fusus.

SYNOPSIS OF SPECIES.

I. Periphery carinated,* bearing hollow spines or foliations.
Keel with foliar extensions. 1. *F. foliaceus.*
Keel with spinous extensions.
(*a*). No spines in front of keel.
Posterior slope of whorl lirate.
Basal liræ spinous; posterior slope concave.
2. *F. acanthostephes.*
Basal liræ without spines; posterior slope convex.
3. *F. craspedotus.*
Posterior slope without liræ.
Basal liræ without spines.
4. *F. spiniferus.*
(*b*). Two rows of spines in front of keel.
One row of spines behind keel.
5. *F. cochleatus.*
Two rows of spines behind keel.
6. *F. senticosus.**

The species of this group are obviously congeneric with *F. pagoda*, Lesson, which Professor v. Martens has recently attached to a new sub-genus of *Pleurotoma*, named *Columbarium*, on account of peculiarities of the radula; but on conchological grounds it will be convenient to include them under *Fusus*.

II. Periphery (of last whorl at least) angulated or shouldered; whorls ribbed or tuberculated.
Whorls tabulated, crenate-dentate on the keel.
7. *F. dictyotis.*
Whorls equally sloping from the angulation.
Liræ on penultimate whorl.
Ten, stout, equal. 8. *F. Johnstoni.*
Twenty, slender, unequal.
9. *F. simulans.*
Seven, slender, subequal.
10. *F. sculptilis.*
Whorls angulated over anterior suture.
Periphery with keel-like ridges.
7. *F. dictyotis, var.*
Periphery with blunt nodulations.
11. *F. incompositus.*
Periphery with cuneiform, acute, tubercles.

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* In most examples of *F. senticosus*, the whorls are quadrately rounded and only feebly carinated.

Apex large hemispheric; spire sub-cylindric.
12. *F. tholoides.*
Apex smaller; spire conic, ventricose.
13. *F. Aldingensis.*

III. Periphery neither angulated nor shouldered.
Shell lanceolate-fusiform.
Whorls flat, spirally lirate; no costæ.
14. *F. aciformis.*
Whorls flat, costated, spirally sulcated.
15. *F. hexagonalis.*
Whorls rounded, costated, with distant slender liræ. 10. *F. sculptilis.*
Shell elongate-fusiform.
Whorls rounded or flatly convex and subimbricating, without costæ; apex bulbous.
16. *F. bulbodes.*
Whorls rounded, posterior whorls plicate.
Liræ slender and granular; canal long and slender. 17. *F. Meredithæ.*
Liræ prominent angular, whorls very convex, spire attenuated. 18. *F. Gippslandicus.*
Liræ thick, few; canal short and stout.
19. *F. dumetosus.*
Whorls squarely rounded, covered with rows of tubular spines. 6. *F. senticosus.*
Shell ovately fusiform.
Whorls rounded, posterior whorls plicate.
20. *F. Tateanus.*

SPECIES EXCLUDED.

F. funiculatus, T. Woods, is transferred to *Columbella*.
F. Ino., T. Woods, is transferred to *Dennantia*.
F. Roblini, T. Woods, is transferred to *Siphonalia*.
F. styliformis, T. Woods, is transferred to *Sipho*.
F. transenna, T. Woods, is transferred to *Peristernia*.
F. vitreoides, R. M. Johnston, in Proc. Roy. Soc., Tasm., for 1879, p. 32, from Table Cape, is uniquely represented by a rolled imperfect shell offering no distinctive characters, and had better be expunged; the generic position is very doubtful.

1. Fusus foliaceus, *spec. nov.* Plate vii., fig. 10.

Shell rather thin, with a high gradated spire ending in a small blunt mamillate apex of one and a half smooth whorls. Whorls eight and a half, the third whorl angulated in the middle and plicate; the rest of the whorls excessively angulated, the keel extended into a compressed upturned flange. The flange consists of two laminæ, separated and supported by vertical transverse plates. The posterior slope of the whorls within the

flange is flat or slightly convex, ornamented with close fine sinuous growth-lines and by inconspicuous spiral threads; the coronal flange is obliquely wrinkle-ridged on both sides, raised into depressed scales on the outer side, particularly on the anterior whorls. Last whorl contracted very much from the middle of the base, which is defined by a strong thread coincident with the posterior angle of the aperture, and prolonged into a very long and very narrow slightly flexuous beak; base lirate (about ten), with alternating slender threads crossed by close imbricating lamellæ of growth; the beak is ornamented with oblique raised threads alternately large and small, wrinkled across by scaly lamellæ.

Aperture angularly rounded; outer lip thin, running out into a narrow canal at the keel, in front of which the margin is serrated, and lirate within; inner lip continuous, with outer lip at the top, somewhat thickened to the pillar beyond which it is continued as a sharp thin lamina.

Dimensions of a moderate-sized specimen:—Length, 44; breadth in front of flange, 11; length of aperture, 8; of canal, 25. Dimensions of figured specimen, of which the canal is incomplete:—Length, 44; breadth, 16; aperture height, 11·5; breadth, 9; length of canal, 19.

Localities.—Lower beds at Muddy Creek and blue clays at Schnapper Point.

This beautiful fossil is so much like the Challenger species, *F. pagodoides*, Watson, taken at a depth of 410 fathoms off Sydney, that it might easily be mistaken for it. The very ample description and figure of that species, however, permit to point out differential and distinctive characters: the fossil has a much smaller apex, is densely lirate on the anterior and base of body whorl, the beak is not prickly, and the coronal fringe is largely developed on all the whorls except the three apical ones.

2. Fusus acanthostephes, *spec. nov.* Plate vii., fig. 7.

Shell fusiform, rather thin, with a turreted spire ending in a small sphæroidal apex, the next whorl very narrow and angulated; the rest of the whorls (six) excessively angulated and coronated at the keel with large erect or radially extended, compressed, hollow spikes. Last and penultimate whorls with three rounded serrated ridges on the posterior slope, reduced to one on the middle whorls and entirely absent on the earlier ones. Base of last whorl very contracted and precipitous, ornamented with four or five angular keels, the third from the coronal fringe serrated, the others carrying short, crowded recurved prickles. Beak encircled with prickly ridges. Margin of outer lip serrate-dentate, grooved within.

Length, 55; breadth, 20; aperture, height, 9·5; breadth, 7·5; length of canal, 30.

Localities.—Blue clays at Schnapper Point, and lower beds at Muddy Creek.

Another remarkable species of the same type as *F. foliaceus*, but the coronal fringe is cut up into spines, as in the recent *F. pagoda*, Lesson, from which it differs by its shorter spire and narrower whorls, serrated liræ on the posterior slope of the whorls, and in the shape of the last whorl, which is prickly spirally ridged on the base.

3. Fusus craspedotus, *spec. nov.* Plate vii., fig. 4.

Shell thin, fusiform, with a high spire, ending in a small mamillate apex of two smooth whorls; whorls eight and a half in all, excepting apical ones, very angular, and compressed into a narrow keel, crenate-dentate on the margin. Last whorl with the posterior slope convex, depressed behind the keel, and much more so at the suture; the rounded and contracted base is produced into a long, rather broad, somewhat flexuous beak; ornamented on the posterior slope with numerous inconspicuous spiral threads, and towards the middle by two or three prominent ones, crossed by growth lines which are raised into minute scales on the larger liræ; bases of serrations with rounded ridges conformable with their curvature. Base of body whorl encircled by a slender keel, which is coincident with the posterior angle of the aperture; the whole surface roughly cancellated by numerous unequal spiral threads and lamellæ of growth; beak encircled with spiral threads and two or three ridges carrying vaulted scales.

Aperture angularly rounded; outer lip thin, its margin crenulated, sulcated within, running back in a short canal at the keel, and somewhat insinuated behind the keel.

Length (canal incomplete), 47; breadth, 20; aperture, height 15, breadth 8; length of canal (incomplete), 14.

Localities.—Blue clays at Schnapper Point; and lower beds at Muddy Creek; Table Cape (*R. M. Johnston!*).

This belongs to the same group as *F. foliaceus*, and, like all cohabitant species, the interior is grooved coincident with the keel; its shape and ornament distinguish it.

4. Fusus spiniferus, *spec. nov.* Plate vii., fig. 1.

Shell somewhat thin, of seven whorls, similar to *F. acanthostephes*, with a shorter spire; the summit is a little variable in shape, but is never spherical; the posterior slope of the whorls without any spiral ornament; the base of the last whorl with a crenated slender keel coincident with the posterior angle of the aperture, and usually with a similar one in front of, but

contiguous to it; anterior to which is a spiral thread or two. Outer lip dentate on the margin corresponding with the basal liræ.

Length, 32; breadth, 11; height of aperture, 8; length of canal, 18.

Locality.—"Gastropod-bed" of the River Murray Cliffs near Morgan.

5. Fusus cochleatus, *spec. nov.* Plate viii., fig. 9.

Shell elongately fusiform, whorls nine and a half, apex obtuse of one and a half rounded whorls; the rest of the whorls bisected by a thin, compressed, elevated keel, extended into flat, vaulted, pointed scales; the first three spire whorls ornamented only with close sinuous growth lines, the others with a strong ridge on the posterior slope contiguous to the keel, and two similar, equi-distant ones in front, all provided with scales like those on the keel, though smaller. Canal encircled with rows of vaulted scales.

Length, 34; breadth, 12; length of canal and aperture, 18.

Locality.—Turritella clays, Blanche Point, Aldinga Bay.

6. Fusus senticosus, *spec. nov.* Plate vii., fig. 3.

Shell thin, elongately fusiform, slender; whorls six and a half, apex obtuse of one and a half more or less elongate smooth whorls; the other whorls squarely rounded, deeply impressed at the suture, with five encircling ribs covered with tubular hollow spines, or slender vaulted pointed scales; the middle rib on the angle of the whorl stouter than the rest, and furnished with long spines. Last whorl shouldered and subtabulated, with two or three threads rarely wanting on the posterior slope; the rounded base and canal with equi-distant similar spiral liræ, one or two on the canal are stouter and provided with larger spines.

The transverse ornament is very peculiar, consisting of imbricating lamellæ, more or less radially disposed around the bases of the spines, and the bundles of one row somewhat alternating with those of the next.

Length, 20; breadth, 5·5; height of aperture, 4; length of canal, 10.

Localities.—Blue clays at Schnapper Point; lower beds at Muddy Creek; gastropod-bed, River Murray Cliffs, near Morgan.

7. Fusus dictyotis, *spec. nov.* Plate vii., figs. 2 and 6.

Shell stout, elongately fusiform with a high gradated spire, angulated whorls, serrately-dentate on the keel, finely spirally lirate and crossed by thin lamellæ. Whorls, nine, in-

cluding the mamillate apex of two subglobose whorls; earlier ones bicarinated, stoutly costated, and latticed by spiral liræ, and frilled lamellæ of growth. Anterior whorls bisected by a strong keel raised into wide cuneate compressed serrations, almost tabulated above, conically contracted in front with a strong spiral thread in the middle line; there are about nine unequal liræ on the posterior slope of the penultimate whorl, and an equal number in front of the keel. Last whorl a little ventricose in the middle line, rounded at the base, and contracted into a long, nearly straight, open canal; there are eight rounded plications on the whorl, vanishing on the base; anterior portion of whorl with raised angular encircling liræ, with alternating slender and stouter threads in the interspaces; whole surface crossed by thin continuous lamellæ, which project into vaulted scales on the encircling keels and liræ; canal ornamented as the base, but the vaulted scales on the stouter ridges projecting into small sharp points.

Aperture angularly rounded; outer lip thin, lirate within, continuous with the inner lip which is continued as a sharp, thin, elevated lamina to the extremity of the canal.

Length, 82; breadth, 24; aperture, height, 16; width, 11; length of canal, 35.

Localities.—Blue clays at Schnapper Point; lower beds at Muddy Creek; gastropod-bed of the River Murray Cliffs, near Morgan; and in a well sinking 24 miles north of Morgan.

Var., Pl. vii., fig. 6, with a longer straight declining shoulder; plications rounded, not produced into sharp points, the angulation which is less prominent. The figured specimen is an extreme form, but it is connected with the type by graduating specimens.

Localities.—Lower beds at Muddy Creek; River Murray Cliffs; Table Cape (*R. M. Johnston!*)

8. Fusus Johnstoni, *T. Woods.* Plate xii., figs. 4*a*, 4*b*.

F. Johnstoni, T. Woods, Proc. Roy. Soc., Tasmania, for 1876, p. 94.

Shell narrowly fusiform, terminating in an obtuse apex of two smooth subglobose whorls; whorls eight (excepting the nuclear ones), convex, angular, spirally lirate, and transversely plicate. The liræ are stout convex equal and equidistant, sometimes with a thread in the interstices, about 10 on the penultimate whorl. Costæ broad, rounded, about eight to 10 on each of the anterior whorls, but diminish in number up the spire, and scarcely appear in front of the periphery on the last whorl.

Length, 21; breadth, 9; length of canal and aperture, 16.

Locality.—Table Cape. (*R. M. Johnston!*)

This species differs from *F. Meridithæ* by its less acuminate spire, more angular and regularly plicate whorls; the whorls are more regularly increasing than in *F. simulans*, and the liræ are very much stouter and fewer.

9. Fusus simulans, *spec. nov.* Plate x., figs. 2*a*, 2*b*.

Shell closely approximating to *F. Meredithæ;* whorls eight, all, excepting the two large apical ones, angulated or angularly convex, slenderly costated, and tuberculated on the keel; costæ, seven to nine on the last whorl; liræ not all granulated, about 20 on penultimate whorl alternately large and small.

The angular stoutly tuberculated whorls are characters too pronounced to permit of specific identity with *F. Meredithæ;* the apex though small is about twice the size of the Tasmanian fossil.

Length, 31; breadth, 12·5; length of aperture and canal, 7.

Localities.—Gastropod-bed of the River Murray cliffs, near Morgan; lower beds at Muddy Creek.

10. Fusus sculptilis, *spec. nov.* Plate x., fig. 13.

Shell lanceolar-fusiform, thin, of seven and a half whorls. Apex blunt, of one and a half rounded smooth whorls, becoming angulated and graduating into the next whorl, which is medially angulated and transversely costated; the rest of the whorls convex, of slow increase, separated by a deep impressed suture, ornamented with costæ and curved transverse threadlets, and strong encircling threads.

The costæ are rounded, moderately elevated, and number about ten on the body whorl. The liræ are flat, thin, more or less minutely crenulated, and raised into small acute nodulations as they pass over the costæ; on the penultimate whorl there are about six principal liræ, the one at the periphery stronger than the rest, with one slender thread here and there in between.

Last whorl abruptly attenuated into a long, narrow, straight canal; the costæ faintly extending on to the canal, which is spirally lirate. Aperture oval, peristome continuous, inner lip faintly lirate within.

Length, 14; breadth, 4; length of aperture and canal, 8.

Locality.—Clayey green-sands, Adelaide bore.

11. Fusus incompositus, *spec. nov.* Plate iii., fig. 9.?

Shell elongate-fusiform, with the spire suddenly contracted in front of the large subcylindrical apex, which consists of two smooth ventricose whorls, with the extreme tip somewhat obliquely flattened down. The next whorl is very narrow, subangulated medially, and spirally striated; the three other

whorls are roundly angled a little in front of the medial line, with a row of large, rounded, nodular plications on the anterior slope, ornamented with raised, angular, spiral threads (12 to 15 on the penultimate whorl, of which the posterior are finer than the anterior ones), crossed by flexuous striæ. The nodulations on the last whorl are six, large, faintly traceable to the suture as oblique undulations, and vanishing anteriorly at the base, which is contracted into a long, slightly flexuous, lirate and transversely striated beak.

Length, 27; breadth, 9; length of aperture and canal, 16.

Localities.—Clayey green sands, Adelaide bore; and "Turritella clays," Blanche Point, Aldinga Bay.

12. Fusus tholoides, *spec. nov.* Plate iii., fig. 11.

Shell fusiform, with a short spire ending in a very blunt hemispheric apex. Whorls five, the first smooth, depressed; the second high, flatly convex, radially ribbed and spirally lirate; the third slightly angular medially with similar but stronger ornament; the anterior whorls angularly convex, slightly angled, and crenately serrate at the shoulder; faintly transversely costated (about 10 to a whorl), and irregularly cancellated by spiral liræ and transverse threads. There are about 10 liræ on the posterior slope of the penultimate, and six alternately stout and slender on the front.

The last whorl is obscurely flatly rounded in the middle where the costæ fade away, thence abruptly contracted in a long, straight, open beak; base with numerous granularly wrinkled liræ; the interspaces closely cancellated.

Length, 22; breadth, 9; length of canal and aperture, 15.

Locality.—Clayey-green sands, Adelaide bore.

13. Fusus Aldingensis, *spec. nov.* Plate iii., fig. 10.

The young shell resembles *F. tholoides*, but has a broader spire, smaller blunt apex, the whorls subimbricating with a suprasutural angulation crowned with stronger serrations.

Length, 22; breadth, 9·5; length of canal and aperture, 16.

Adult specimens of seven whorls have the anterior whorls sharply keeled in the anterior third, obliquely plicated, the plicæ (10 to a whorl) forming wedge-shaped tubercles on the keel; the whole surface is finely cancellated by slender spiral threads and transverse striæ. At this stage the species simulates *Fasciolaria cristata* (see p. 151), but apart from other differences the incisions on the keel are very much shallower and the projections very much smaller and pointed.

Length, 35; breadth, 14·5; length of aperture and canal, 20.

Locality.—Turritella-clays, Blanche Point, Aldinga Bay.

14. Fusus aciformis, *spec. nov.* Plate vii, figs. 5*a*—5*b*.

Shell lanceolate-fusiform, with a regular decreasing spire of flatly convex whorls, terminating in an obtuse summit of two and a half whorls; the anterior whorl of the apex is tumid in the middle, radially ridged, and is wider than the succeeding spire-whorl; the next apical whorl is much narrowed, and the small tip is depressed. Whorls 10½, excepting the apical ones, almost flat; suture linear, somewhat concealed; the earlier whorls with five equal equidistant subacute elevated liræ, the broad concave interspaces traversed with close-set growth-wrinkles; the liræ increase in number with the growth of the shell and are about ten on the penultimate whorl.

Last whorl of very slight increase, gradually tapering into the long straight beak, ornamented with wavy, acute, encircling ridges. Outer lip thin, lirate within; peristome continuous, inner lip not reflected.

Length, 41; breadth, 7; length of canal and aperture, 22.

Localities.—Blue clays at Schnapper Point; and lower beds at Muddy Creek.

In its very narrow lanceolate form this fossil most resembles *F. acus*, Adams and Reeve; but the whorls are flatter, and without axial ribs.

15. Fusus hexagonalis, *spec. nov.* Plate iii., figs. 15*a*—15*b*.

Shell linear-lanceolar-fusiform, prismatic. Apex of two and a half whorls, medially angulated; the anterior one costated and projecting beyond the succeeding whorl, the next narrower, smooth, and ending in an upturned lateral point. The rest of the whorls six and a half, the earlier ones angulated medially, gradually becoming flatly convex, separated by a deep suture; with slender axial plications or angulations, usually six on a whorl in an alignment one with another from whorl to whorl, thereby imparting an hexagonal outline to the spire; ornamented with flat encircling ridges and grooves, the relative width of the ridges and furrows being different for different individuals, and traversed by growth lines, which are raised into arched scales at the suture.

Last whorl of slight increase, convex or flatly rounded at the periphery, costæ reaching to the base, but not on to the beak; ornamented as the spire; rather abruptly contracted into a long, slender, straight beak. Aperture narrow, oval-oblong; outer lip lirate within, its margin crenulated.

Length, 19; breadth, 3; length of aperture and canal, 11·5.

Locality.—Lower beds at Muddy Creek.

16. Fusus bulbodes, *spec. nov.* Plate vii., fig. 8.

Shell long, fusiform, with a rapidly narrowing spire of sub-imbricating whorls, terminating in a large ovoid summit.

Whorls eight, the first somewhat globose, the next very narrow, smooth, and bicarinated, the third nearly flat, shining, and spirally scratched; the other whorls gradually becoming more and more obtusely angled and swollen round the anterior part, being very contracted at the anterior suture, and flatly sloping to the posterior suture; encircled with raised threads (about 15 on the penultimate whorl) narrower than the interspaces, which are traversed by close-set striæ.

Last whorl tumid and rounded at the periphery, rapidly contracted at the base into a long, narrow, straight canal; the surface tessellated by transverse threads and stouter spiral liræ.

Dimensions of young perfect specimen of five whorls.—Length, 44; breadth, 10·5; length of canal and aperture, 27·5; diameter of bulbous summit, 4·5. Of a large incomplete specimen.—Length, 68 (85 estimated); breadth, 22·5; length of canal and aperture, 33 (estimated 50).

Localities.—Blue clays at Schnapper Point; and lower beds at Muddy Creek.

17. Fusus Meredithæ, *T. Woods.*

F. gracillimus, Tenison Woods, Proc. Roy. Soc., Tasm., for 1875, p. 22 (non Adams and Reeve).

F. Meredithæ, Tenison Woods, op. cit. on legend to pl. i, fig. 6.

Shell elongate-fusiform, with a high conical acuminate spire, ending in a very slender apex of one and a half smooth high whorls. Whorls below the apex, seven and a half, convex, the body whorl sometimes subangulated and somewhat tumid, spirally sulcated, and slenderly ribbed and transversely costated.

There are about 10 slender costæ on each of the posterior whorls, becoming more and more reduced in size, usually absent on one or more of the median whorls, and on the body whorl are represented by short corrugations at the periphery. The spiral threads are flatly rounded, alternating with a little wider flat grooves often with a fine thread in the middle; crossed by distant striæ which obscurely granulate the liræ. There are about 12 liræ on the penultimate whorl.

Aperture ovate, rather abruptly contracted to the long, rather open canal; outer lip thin, obscurely crenulated on the margin, lirate within.

Length, 33; breadth, 11; length of aperture, 8; of canal, 10.

Locality.—Table Cape. *(Hobart Mus.! R. M. Johnston!)*

18. Fusus Gippslandicus, *spec. nov.*

Shell elongate-fusiform, ending in a smallish mamillate apex of one and a half smooth-rounded whorl, the tips

laterally immersed; whorls below the apex seven, of very slow increase, convex, much contracted at both sutures, stoutly but narrowly ribbed, lirate. Transverse plications about 11 to a whorl, narrow, very prominent, slightly nodulose, almost obsolete on the body whorl. Spiral ridges angular, four of which on the middle and front very prominent, with an intermediate thread. Three slender liræ on the posterior slope; whole surface transversely closely wrinkled. Base gradually attenuated, ornamented with alternately large and small angular encircling ridges.

Length, 44; breadth, 13; length of aperture, 12, of canal, 12.

Localities.—Jemmy's Point and Cunninghame, Gippsland. (*W. H. Gregson!*)

This is a more slender shell with narrower costæ than *F. dumetosus*; it differs from *F. Meredithæ* by its coarser ornament, more convex whorls, and less ventricose body whorl.

19. Fusus dumetosus, *spec. nov.* Plate ix., fig. 1.

Shell stoutly fusiform, whorls rounded and spirally ridged; differing from *F. ustulatus*, Reeve, by the whorls being of less rapid increase, last whorl not so ventricose, and by the absence of axial plications on the anterior whorls, at least, on the body whorl.

Length, without apex, 31·5; breadth, 12·5; length of aperture and canal, 18.

Locality.—Upper beds at Muddy Creek (*J. Dennant!*)

20. Fusus Tateanus, *T. Woods.* Plate xiii., fig. 5.

F. Tateana, Tenison Woods, Proc. Roy. Soc., Tasmania, for 1876, p. 94.

Shell ovately fusiform; whorls seven (without apex), the body and penultimate whorls roundly convex, obscurely distantly spirally lirate and transversely striated; the rest of the spire whorls flatly convex, the posterior ones costated and lirated. There are about ten costæ in a whorl, and about 15 subangular threads equi-distant and about equal to the intervening sulci. Last whorl rather sloping to the suture; aperture elliptic, outer lip thin and abruptly incurved to the long, narrow canal.

Length of an incomplete specimen, 86; breadth, 35; length of aperture, 30; of canal, so much as known, 25.

Locality.—Table Cape, Tasmania (*Hobart Mus.! R. M. Johnston!*)

This fossil is very distinct from any living species, but is remotely related to *F. longævus* of the European Eocene.

Genus Siphonalia.

SYNOPSIS OF SPECIES.

Whorls angulated, subimbricating.
- Spire elevated; crenate-dentate on the keel; spirally lirate. 1. *S. subreflexa.*
- Spire short; nodulate on the keel; transversely lamellate. 2. *S. lamellifera.*

Whorls shouldered.
- Shell elongate-fusiform and costated.
  - Liræ, 15; tubercles, 13. 3. *S. Roblini*
  - Liræ, 11; tubercles, 11, and stouter. 4. *S. longirostris.*
- Shell pyriform, costated anteriorly. 5. *S. spatiosa.*

1. Siphonalia subreflexa, *G. B. Sowerby.*

Fusus subreflexus, G. B. Sowerby, in Darwin's Geological Observations, 1844, 2nd ed., p. 616, t. 4, fig. 57.

Shell fusiformly turreted; apex small mamillate of two smoothwhorls; the next four whorls convex, transversely costated, and spirally lirate; the four anterior whorls angulated and ventricose in front of the middle, the posterior slope convex, tuberculated on the keel, spirally lirate with alternately stout and slender threads, and cancellated by transverse striæ. The tubercles are compressed, prominent, and about 13 to a whorl. Aperture large, oval; outer lip lirate within; canal long, curved to the left.

Length, 85; breadth, 40; length of aperture, 32; width of aperture, 19; length of canal (incomplete), 20.

Locality.—Lower beds at Muddy Creek (*J. Dennant!*)

This species is markedly distinct from the two next species by its prominent submedial tuberculated keel, without any trace of costation, except on the posterior whorls. It is with some reluctance that I ascribe our fossil to Sowerby's *F. subreflexus*, from the Chilian Tertiary, as it is possible that differerences of ornament or other minute characters may really exist which are not pictorially or verbally indicated.

2. Siphonalia lamellifera, *spec. nov.* Plate viii., fig. 5.

Shell ovately fusiform, stout, with a low conic spire of subimbricating flat whorls ending in an obtuse apex. Whorls six, angulate over the suture; last and penultimate whorls bluntly nodulose on the keel (eight to a whorl). Last whorl bisected by a blunt keel, the medial portion roundly truncated, ornamented with stout plications, which terminate at the keel in stout, blunt nodulations; anteriorly abruptly contracted into the concave base, which is prolonged into a broad, curved, upturned, longish canal. Surface ornamented with imbricating

lamellæ insinuated at the keel; at the keel, and in front of it, the lamellæ are raised into slender close frills, which about the keel are more or less continuous, and appear as raised threads. Aperture trapezoidal; outer lip smooth within for a distance of about six mills., beyond which the surface is closely and regularly spirally striated, and provided with narrow and short callous ridges.

Length, 52; breadth, 29; length of aperture and canal, 36.

Locality.—Blue clays at Schnapper Point, Port Phillip.

3. Siphonalia Roblini, *T. Woods.*

Fusus Roblini, Tenison-Woods, Proc. Roy. Soc., Tasman., for 1876, p. 22, tab. 1, fig. 7.

Anterior whorls subangulated, with 13 subdistant, somewhat sharp tubercles on the angulation,* ornamented with spiral acute threads, alternately large and small—about 15 large ones on the penultimate whorl—cancellated by thickish subdistant transverse striæ. The posterior whorls are transversely plicate, the plicæ gradually reduced to tubercles. Aperture elongately pyriform; outer lip thin, costated within; canal elongate, twisted, and recurved.

The type specimen possesses five and a half whorls, the apex being broken off, and has a length of 66, breadth of 30, length of aperture and canal of 41, and breadth of aperture of 14.

Locality.—Table Cape (*Hobart Mus.!*).

4. Siphonalia longirostris, *spec. nov.* Pl. xi., fig. 8.

Shell elongate-fusiform, with a high subscalar spire, ending in a small mamillate apex of one and a half smooth convex whorls. Whorls nine, convex to subangulated; ornamented with transverse costæ, which are reduced to somewhat sharp tubercles, and subacute spiral threads alternately large and small, crossed by subdistant lamellæ. There are 11 tubercles on the body whorl and about 11 strong spiral threads on the penultimate whorl.

Aperture elongately pyriform; outer lip thin, internally sulcated; canal elongate and much twisted.

Length, 69; breadth, 27; length of aperture and canal, 40; breadth of aperture, 11.

Localities.—Blue clays at Schnapper Point and lower beds at Muddy Creek.

This species differs from *S. Roblini* by its more convex whorls, more elevated and stouter costæ, and by the fewer and stouter spiral threads.

5. Siphonalia spatiosa, *spec. nov.* Plate iv., fig. 5.

Shell somewhat elongately pyriform; whorls six; apex want-

* The figure represents the tubercles much too large.

ing; posterior whorls flat or slightly convex, with a row of nodulations at the anterior suture; anterior whorls tabulate, the posterior slope very wide, upward inclined, the anterior slope narrow and contracted at the suture, roundly plicated, the plicæ terminating at the keel in obtuse nodulations. Last whorl ventricose in the middle, slightly sloping from the keel for a distance equal to the length of the posterior slope, thence suddenly contracted in a long, rather wide, curved, and slightly reverted canal; the transverse plications do not extend on to the base, and are absent in the anterior-fourth of the whorl; there are 14 nodulations on the last whorl.

The whole surface is ornamented with crowded depressed rounded spiral threads, alternately large and small, crossed by curved lines and striæ of growth which obscurely crenulate the liræ.

Aperture large, oval; outer lip slightly dilated anteriorly, and slightly ascending posteriorly, smooth within; inner lip widely spreading over the columella and decurrent on the inner face of the canal; columella slightly concave above the pillar.

Length, 98; breadth, 48; length of aperture and canal, 73.

Locality.—Upper beds at Muddy Creek. (*J. Dennant!*)

Genus Sipho.

SYNOPSIS OF SPECIES.

Aperture variced; without costæ. 1. *S. labrosus.*

Aperture simple.

Ornament of granular rows; no costæ. 2. *S. crebrigranosus.*

Ornament of flat equal threads; costated. 3. *S. styliformis.*

Ornament of round threads, alternately large and and small and transverse lamellæ, with or without costæ. 4. *S. asperulus.*

1. Sipho labrosus, *spec. nov.* Plate iii., fig. 7.

Shell linear-lanceolar-fusiform, thin, of five and a half whorls, ending in a large blunt mamillary apex of one and a half globose smooth whorls. The other whorls convex, separated by a deep suture, ornamented all over with encircling liræ (ten on the penultimate whorl) alternately stout and slender, crossed by angular threads raised into subgranular imbrications on the liræ.

Last whorl gradually attenuated into the long, slightly curved and reverted, open canal; the outer lip is thickened by a varix slightly removed from the edge, varix somewhat angular and insinuated at the suture.

Aperture narrow-oval, peristome entire and smooth.
Length, 11; breadth, 3·5; length of aperture and canal, 6.
Locality.—Lower beds at Muddy Creek.

2. Sipho crebrigranosus, *spec. nov.* Plate iii., fig. 8.

Shell broadly lanceolar-fusiform, rather stout, of six and a half whorls, ending in a large blunt mamillary apex of two globose smooth whorls; the rest of the whorls moderately convex, separated by a linear suture; ornamented all over with equal and equi-distant encircling liræ and transverse threads, almost obliterated by the development of granules at the intercrossing (the liræ are about 12 on the penultimate whorl). Last whorl tapering into a moderately long, slightly curved, hardly reverted, open canal; inner lip lirate within.
Length, 13; breadth, 4; length of aperture and canal, 8.
Locality.—Lower beds at Muddy Creek.

3. Sipho styliformis, *T. Woods.*

Fusus styliformis, Tenison-Woods, Proc. Lin. Soc., N.S.W., vol. iv., p. 12, tab. 3, fig, 6, 1879.
Shell elongately fusiform, slender, thin; whorls seven. Apex of two smooth whorls, joined to the spire by a thick varix, behind which, for about half a whorl, the surface is costated, thence rapidly enlarging into a globose whorl terminating in a narrow subimmersed tip. The spire whorls slightly convex, a little contracted at the anterior suture, rendered almost prismatic by regular disposed rounded plications (seven to a whorl); suture impressed, more or less concealed by vaulted imbricating scales; ornamented with flat spiral liræ about or nearly equalling the flat, smooth, intervening furrows (about seven on the penultimate whorl).
Body whorl rather abruptly contracted into a long, wide, slightly twisted and reverted canal; aperture ovate; outer lip thin; lirate within; columella arched, smooth.
Length, 12·5; breadth, 4·5; length of canal and aperture, 7.
Localities.—Lower beds at Muddy Creek; "gastropod bed" of the River Murray Cliffs, near Morgan.

4. Sipho asperulus, *spec. nov.* Plate vi., fig. 5.

Shell similar to *S. styliformis*, but larger, with flat whorls channelled at the suture, and the ornament consisting of spiral, narrow, rounded threads alternately large and small (about ten on the penultimate whorl), crossed by lamellæ, which are raised into low scales over the liræ. The plications are not so strongly developed as in the allied species, and are more usually obsolete or reduced to axial angularities.

Length, 19; breadth, 7; length of aperture 5, and of canal 5; width of aperture, 3.

Locality.—Lower beds at Muddy Creek.

Genus Pseudovaricia.

Name in allusion to the abnormal character of the varices.

Type.—P. mirabilis, *spec. nov.*

Generic characters.—Shell cylindroid-fusiform, smooth, spire obtuse, whorls with a few remote and non-continuous imbricating varices; canal very short, wide; columella smooth, slightly arched.

The varices are not produced as ordinarily by an outward thickening or bulging of the shell wall, but appear as abrupt step-like interruptions to the regularity of the spiral curve, and seem to indicate that each periodic mouth was slightly margined with enamel, and the new growth to have been commenced from within, so that the successive growths are not in the same plane.

The peculiarity of its variceal characters and the blunt apex remove this genus from *Genea*, Bellardi, of the Italian Tertiary, which in other particulars it resembles. Tryon, in his Manual of Conchology, places *Genea* in a subordinate position to *Fusus*, but I think it is more related to *Neptunea* or *Sipho*.

1. Pseudovaricia mirabilis, *spec. nov.* Pl. vii., figs. 9*a*—9*c*.

Shell elongately fusiform, smooth, shining, rather thin, with a cylindrical spire a little longer than the aperture, ending in a very blunt apex of two very rapidly narrowing whorls, flattened at the summit.

Whorls below the apex, six, very broad, of slow increase, flatly convex, with a very narrow high-sloping shoulder, defined by a strong thread; 11 varices, or about two to a whorl, irregularly disposed. Whole surface transversely, finely, and closely striated, except on the shoulder, where they are stouter and more distant. On each side of the angulation are two or three spiral threads, which on the posterior whorls are cut up into elongate granulations.

Aperture elliptical; outer lip plain, smooth within; columella slightly incurved, smooth; canal wide, short, nearly straight, obliquely emarginate.

Length, 46; breadth, 13; length of aperture and canal, 21; width of aperture, 6.

Locality.—Lower beds at Muddy Creek (*J. Dennant!*).

Genus Cominella.

SYNOPSIS OF SPECIES.

Whorls convex, not shouldered.

Lirate, posteriorly faintly costated.	1.	*C. crassina.*
Strongly lirate and linearly costated, punctatedly impressed.	2.	*C. pertusa.*
Costated throughout.	3.	*C. subfilicea.*
Plicately-wrinkled; base smooth.	4.	*C. pumila.*
Whorls shouldered and, except body whorl, strongly costated.	5.	*C. Clelandi.*

Species excluded.

C. cancellata, *T. Woods*, is transferred to *Bela* as *B. Woodsii.*
C. lyræcostata, *T. Woods*, is transferred to *Phos.*

1. Cominella crassina, *spec. nov.* Plate x., fig. 4.

Shell excessively strong with the form of the elate variety of *C. alveolata*, Kiener, described as *C. Adelaidensis*, Crosse and Fischer; the ante-sutural impression is broad and well defined, the posterior whorls only are faintly costated; the differential characters are the wide, flat encircling furrows, as wide, or nearly as wide, as the ridges, marked with transverse, curved lines; the outer lip is strongly ridged within.

Length, 32; breadth, 16; length of aperture and canal, 19·5.

Locality.—Upper beds at Muddy Creek (*J. Dennant!*).

2. Cominella ? pertusa, *spec. nov.* Plate ix., fig. 11.

Shell minute, ovate-oblong; apex small, mamillate, of one and a half whorls with the tip obliquely immersed; the rest of the whorls four, convex, suture impressed, ornamented with straight, thread-like costæ, about 15 to a whorl, and thick spiral threads punctatedly impressed in the narrow interstices; spiral threads eight on the penultimate whorl.

Aperture round, large, emarginate in front; outer lip a little dilated, faintly tuberculated within, variced behind.

Length, 4·25; breadth, about 2·5; length of aperture, 2.

Locality.—Clayey green sands, Adelaide bore.

3. Cominella subfilicea, *spec. nov.* Plate x., fig. 6.

Shell with the form of *C. filicea*, Adams, and, like it, with costæ descending to the base of the last whorl, but it differs by its encircling depressed ridges separated by linear furrows, as in most species of the genus, whereas in the living shell the surface is finely striated and marked with colour lines.

Length, 20; breadth, 9; length of aperture and canal, 12.

Localities.—Oyster banks, Aldinga Cliffs; and equivalent beds at Hallett's Cove, St. Vincent Gulf.

4. Cominella pumila, *spec. nov.* Plate iv., fig. 12.

Shell very small, thin, ovate; whorls five, convex, apex mamillate; the whorl next the pullus smooth, the next two ornamented with narrow, close, wrinkle-like transverse ridges, which on the last whorl are confined to the posterior one-third, rest of the whorl inornate.

Length, 5; breadth, 3; length of aperture and canal, 3·5.

Locality.—Clayey green sands, Adelaide bore.

This little fossil has a general resemblance to *Cyllene plumbea*, but wants the distinctive characters proper to that genus.

5. Cominella Clelandi, *spec. nov.* Plate xi., fig. 1; plate xiii., fig. 1.

Shell of the shape and style of ornament of *Trophon Flindersi*, but with the aperture of *Cominella;* posterior whorls with about ten costæ, spirally lirate, last whorl convex, roundly shouldered, costæ obliterated.

Length, estimated, 35; breadth, 22; length of aperture, 24.

Locality.—Upper Aldinga series of beds at Hallett's Cove, collected by Dr. Cleland, Hon. Sec. of the Society, after whom the species is named.

Genus Buccinum.

1. Buccinum fragile, *T. Woods*, Proc. Roy. Soc., Tasm., for 1876, p. 107, from Table Cape, is unknown to me.

Genus Fasciolaria.

SYNOPSIS OF SPECIES.

Whorls rounded, costated
- Ovately fusiform, costæ broad, liræ many. 1. *F. Tenisoni.*
- Lanceolately fusiform, costæ broad, liræ few. 2. *F. exilis.*
- Elongate-fusiform, costæ narrow, angular. 3. *F. concinna.*

Whorls angularly convex, nodulated on the angulation. 4. *F. decipiens.*

Whorls medially raised into a crenately incised keel. 5. *F. cristata.*

Whorls shouldered, costulated in front.
- Elongate-fusiform, last whorl of moderate size, canal nearly straight. 6. *F. cryptoploca.*
- Last whorl ventricose; canal twisted. 7. *F. rugata.*

1. Fasciolaria Tenisoni, *T. Woods.*

Fasciolaria Tenisoni, Tenison-Woods, Proc. Lin. Soc., N.S.W., vol. iv., p. 13, tab. 3, fig. 3, 1879.

Shell ovately fusiform, with a moderately high conic spire, ending in a blunt apex of one and a half subglobose whorls. Whorls six and a half, moderately convex, with broad rib-like folds (nine on the last whorl), wider than the intervening concave interspaces, evanescent towards the posterior suture; ornamented in a spiral direction by narrow, elevated, subacute threads (about 12 on penultimate whorls), sometimes with a thread let in the furrow, cancellated by regular nearly straight growth lines. Columella with one conspicuous plait at the top of the pillar, succeeded by two small ones; canal long, straight; outer lip thin, lirate within.

Length, 30; breadth, 11; length of aperture, 9; and canal, 11.

Locality.—Lower beds at Muddy Creek (*Tenison-Woods* and *J. Dennant!*).

2. Fasciolaria exilis, *spec. nov.* Plate x., fig. 3.

Shell lanceolate-fusiform with an elongate acuminate spire ending in a small blunt apex of two subglobose whorls; whorls nine, excepting the apical ones, flatly convex, transversely plicate, and widely latticed by transverse threadlets and distant encircling liræ. The costæ are about eight to a whorl; on the posterior whorls they are thick and rounded, about equalling the interspaces, becoming narrow more angular and wider apart as the whorls increase; there are six elevated moderately thick liræ on the penultimate whorl, usually with a threadlet in the wide intervening spaces. Last whorl of very slight increase, gradually tapering into the long, straight, narrow beak, which is encircled with flat ridges.

Outer lip crenulated on the margin, lirate within; columella with two or three small oblique plaits.

Length, 18; breadth, 4·5; length of aperture and canal, 9;

Localities.—Gastropod bed of the River Murray Cliffs, near Morgan; blue clays at Schnapper Point; lower beds at Muddy Creek.

3. Fasciolaria concinna, *spec. nov.* Pl. viii., fig. 6.

Shell elongate-fusiform, with a high acuminate spire, ending in a small mamillate apex of one and a half smooth whorls, with the tip immersed and somewhat lateral. Whorls eight and a half, the posterior spire whorls slightly gradated, plicate, encircled with strong liræ, crenulated by close-set transverse striæ; the anterior whorls convex, a little ventricose medially, but more contracted in front than behind; ornamented with narrow, regular, subacute plications, confined to the anterior half of each whorl (15 on the penultimate whorl), and rather stout, elevated, flat spiral ridges (15 on the penultimate whorl), the flat intervening spaces of double the width, provided with

from two to four spiral threadlets; the whole surface transversely striated; the striæ crenulate the edge of the liræ and produce with the spiral threadlets a neat cancellation in the inter-spaces.

Last whorl a little tumid on the base, which contracts abruptly, and is suddenly prolonged into a narrow beak; surface ornamented as the rest of the shell. Aperture round, with a sharp angle at the top; outer lip sharp, thin, well arched, crenulated on the margin, faintly lirate within; inner lip slightly concave, with a thick oblique twist-like fold at the front; canal narrow, long, slender, and nearly straight.

Length, 40; breadth, 15; aperture, length 12, width 7; length of canal, 11.

Locality.—Blue clays at Schnapper Point.

4. Fasciolaria decipiens, *spec. nov.* Plate viii., fig. 1.

Shell elongately fusiform, with a high turrited spire ending in a small blunt mamillate apex of one and a half smooth rounded whorls, the tip immersed.

Whorls nine and a half, of regular increase; the *anterior* ones roundly angulated and nodulated medially, *concave* behind and somewhat contracted in front, ornamented with revolving threads and transverse riblets—the rudely square depressions transversely striated.

Tubercles, twelve on the last whorl, bluntly or subacutely conical, trisected by three peripheral liræ; liræ acute, equidistant, about twelve on the penultimate whorl, those on the medial and anterior areas stouter than those on the posterior slope, sometimes with a threadlet in the intervening furrows.

Body whorl with a high posterior slope, bluntly convex on the periphery, thence gradually contracted into a long, broad, almost straight beak. Aperture elongate-oval; outer lip with a thin porcellanous thickening on the slightly crenulated margin, smooth within; inner lip callously spread and adpressed over the columella; columella with two oblique plaits hardly visible from without.

Length, 68; breadth, 25; aperture, length 21, width 10; length of canal, 16.

Localities.—Lower beds at Muddy Creek; gastropod-bed of the River Murray Cliffs; Table Cape (*R. M. Johnston!*).

Each locality has its own racial variety, and it may be desirable, when fuller material is at hand, to apply distinctive names to each.

The type form from Muddy Creek is the most lanceolate, the breadth to the length is as 1 to 2·7; the Murray variety differs by its more angulate whorls, sharp, stout and simple tubercles, and is proportionately broader, the breadth to the length being

1 to 2·5; the extreme of shape is presented by the Table Cape race, which has a shorter spire, more ventricose body-whorl, with large conical tubercles, the breadth to the length is as 1 to 2·2.

5. Fasciolaria cristata, *spec. nov.* Plate viii., fig. 4.

Shell fusiform, with a high scalar spire of regularly-increasing whorls, ending in a small mamillate apex of one and a half globose whorls, the extreme tip immersed.

Whorls seven and a half, the posterior spire-whorls bluntly angulated in the middle and costated; the anterior whorls angulated, bisected by a sharp, elevated, compressed keel, which is cut into deep crenatures (about 10 on the body whorl), transversely plicated, coincident with the projections on the keel, from which the plicæ are obliquely directed, vanishing towards the posterior suture, but well developed in front, rounded and continued to the anterior suture. Ornamented with angular unequal liræ (about 20 on the penultimate whorl), and rather closely tessellated by growth-lines.

Body whorl with three strong liræ on the front, with a few primary and secondary threads intervening, cancellated by transverse striæ; base gradually attenuated into a long, somewhat narrow, oblique, spirally lirate beak. Aperture oval, large; columella with three oblique conspicuous plaits, the anterior one the strongest, with one to three inconspicuous posterior plaits; plaits sometimes bifid at their ends.

Dimensions of a medium sized specimen:—Length, 41; breadth, 19; length of aperture, 13; of canal, 11.

Locality.—Lower beds at Muddy Creek.

6. Fasciolaria cryptoploca, *spec. nov.* Pl. viii., fig. 2.

Shell fusiform, moderately elongate, with a high scalar spire, ending in a small mamillate apex of one and a half smooth convex whorls.

Whorls nine; the earlier whorls flatly convex, and graduating to tabulated in the two anterior ones. Anterior whorls with nine plications to each whorl; plicæ narrowly rounded, elevated into sharpish conical tubercles at the shoulder, separated by wide, shallow and open furrows, dying out on the posterior slope and on the base of the body whorl; the ornament consists of acute spiral ridges, alternately large and small (about 20 on the penultimate whorl), separated by a little wider angular furrows, roughened by transverse lamellæ of growth.

Aperture oval-oblong; outer lip thin, strongly lirate within; columella with a strong oblique fold, arising from the top of the pillar, and one or two smaller above, not visible from the exterior; canal stout, rather broad, open, slightly bent to the left, and a little reverted.

Length, 46; breadth, 18·5; aperture, length 15, breadth 8.5; length of canal, 13.

Locality.—Lower beds at Muddy Creek.

7. Fasciolaria rugata, *spec. nov.* Plate viii., fig. 3.

This species very much resembles *F. cryptoploca*, but differs by its fewer and more rapidly enlarging whorls, which are about equally sloping from the periphery to the sutures; the canal is shorter and strongly twisted.

There are ten sharp plications on each of the anterior whorls, and the encircling liræ (ten to twelve on the penultimate whorl) are equal-sized, and the surface is usually more rugged by the edges of the imbricating lamellæ than in the allied species.

Dimensions of the type specimen, with six and a half whorls: —Length, 45; breadth, 23; length of aperture 17, of canal 10.

Localities.—Blue clays at Schnapper Point; and lower beds at Muddy Creek (*J. Dennant!*).

Genus Peristernia.

I find it convenient to include under this generic title those fusoid shells having a sharply sinistrally bent canal, with one strong fold on the columella, or with two or more slender plaits additional, and others with a short canal having the columella characters, which I cannot with any degree of confidence refer to established genera or subgenera.

Some of the species, by their long slender canals with two or more plaits, differ from *Fasciolaria* only by the obliquity of the beak. *P. approximans* is more typical; whilst the small group of species congregated around *P. succincta* approaches *Tudicula*. Lastly, there are two small Trophon-like shells, with a very short twisted canal, that cannot consistently be referred to *Trophon* on account of the oblique plait on the columella.

Unacquainted with the majority of the genera of the family established on Tertiary fossils by Conrad, Bellardi, and other palæontologists, I refrain from creating new groups out of the heterogeneous assemblage of species which I have brought together under *Peristernia*.

Synopsis of species.

Peristome not continuous. Apex subacute or mamillate, smooth.

Whorls angulated, costated.

Stoutly lirate; apex subacute. 1. *P. approximans.*

Last whorl convex, without costæ. 2. *P. purpuroides.*

Finely lirate; apex mamillate.

Whorls equally lirate; apex small. 3. *P. Morundiana*

Posterior slope without liræ; apex twice the size. 4. *P. Murrayana.*

Whorls convex, costated.

Costæ broad; canal longer than aperture.

Whorls a little flatted behind. 5. *P. altifrons.*

Whorls equally contracted. 6. *P. Aldingensis.*

Costæ slender; canal short. 7. *P. affinis.*

Whorls convex, not costated.

Cancellated; canal short. 8. *P. transenna.*

Liræ slender; canal very long, attenuated. 9. *P. lintea.*

Stoutly lirate, posterior whorls subangulated and and costated. 2. *P. purpuroides.*

Peristome not continuous. Apex hemisphæric, radially ridged.

Whorls bicarinated. 10. *P. apicilirata.*

Whorls regularly convex. 11. *P. actinostephes.*

Peristome continuous; inner lip erect.

Whorls subpyriform; last whorl ventricose. 12. *P. succincta.*

Whorls fusiform; beak long and slender.

Liræ angular, alternately large and small; whorls flattened at shoulder. 13. *P. interlineata.*

Liræ flat; tranversely wrinkled. 14. *P. subundulosa.*

1. Peristernia approximans, *spec. nov.* Plate ix., fig. 2.

Shell fusiform, solid, of ten angular-convex whorls, ending in a small, subacute apex, provided with eight narrow transverse plications, bent forward on the posterior slope and becoming obsolete on the base of the body whorl. Ornamented with depressed rounded spiral liræ, which are somewhat irregular and unequal, about nine on the posterior slope, decreasing in strength as the suture is approached, about 20 on the medial and front parts of the body whorl; the interstitial spaces are narrower than the liræ, and are pitted by transverse threads, which on the posterior slope appear as crowded imbricating forward-curved lamellæ.

Aperture narrowly ovate; outer lip stoutly lirate within, attenuated and crenatulated at the margin, with an oblique fold at the origin of the canal; columella concave to the slight oblique fold at its junction with the canal; canal rather long, slightly bent to the left, and a little upturned at the extremity.

Length, 27; breadth, 11; length of aperture, 8; of canal, 8.

Localities.—Upper beds at Muddy Creek; oyster banks, Aldinga Cliffs.

This fossil, though not a typical *Peristernia*, cannot well be included under *Trophon* to which its living analogue *P. Paivæ* was originally referred.

Mr. Boog Watson, Zool. Challenger Exped., pt. xlii., p. 194, 1886, writing of *Trophon Hanleyi*, which Mr. Tryon regards as an elate form of *T. Paivæ*, Crosse, says:—"The operculum of this species is not that of *Murex* nor of *Fusus*, still less that of *Urosalpinx*. . . The form of the shell and operculum alike remove it from *Trophon*." In his perplexity he classes it as a *Fusus*. As regards the shell *T. Paivæ* is congeneric with *Siphonalia fuscozonata*, Angas, which Tryon places under *Peristernia*—a position the least objectionable.

Peristernia Paivæ is a variable shell, both as to shape of whorls and length of spire, so also is its fossil representative, and specific differences are not easily definable so as to embrace every individual variation of each. In the living species the whorls are tabulated, and the length of the aperture and canal does not exceed that of the rest of the shell; in *P. approximans* the whorls though angulated are not tabulated, and the length of the aperture and canal is about half as long again as the rest of the shell.

2. Peristernia purpuroides, *spec. nov.* Plate ix., fig. 3.

Shell fusiform, stout, whorls seven, apex small, mamillate. Whorls convex, a little contracted at the anterior suture, the posterior whorls faintly transversely ribbed; ornamented with thick spiral liræ, about nine on the posterior whorl, interstices much narrower than the liræ, and transversely striated.

Aperture oval; outer lip strongly lirate within, with a strong fold at the front; inner lip patulous, callously expanded, decurrent on the pillar, which is bounded on the left by a narrow angulated furrow; there is a strong oblique fold arising from the point of the pillar; canal rather short, stout, and broad, bent to the left, and slightly reverted.

Length, 29; breadth, 14; length of aperture 11·5, of canal 6.

Locality.—Upper beds at Muddy Creek (*J. Dennant!*).

The fossil recalls some varietal forms of *Purpura lapillus*, but its canal and plaited columella remove it from that genus; its affinity to *Peristernia approximans* is unquestionable, though not likely to be confounded with it.

3. Peristernia Morundiana, *spec. nov.* Plate viii., fig. 7.

Shell ovately fusiform, stout, of seven flatly convex whorls of rather rapid increase, with a rather short conic spire ending in a small mamillate apex of two smooth whorls; the anterior

of the apical whorls is almost flat-sided, the posterior one is globose, with the tip laterally immersed. Whorls bluntly angled and tuberculate behind the anterior suture, the posterior slope is very wide and slightly convex; the tubercles are rounded, widely separated, eight to a whorl, vanishing half-way across the posterior slope, but reaching the anterior suture; spirally lirate, liræ acute, about 20 on the penultimate whorl, alternately large and small on the anterior half, closely striated transversely.

Last whorl medially angulated and tuberculated, gradually attenuated into a broad, open, much curved shortish beak. Aperture oval; outer lip thin, faintly lirate within; columella with a strong plait at the front decurrent on the canal, behind which is a second, and though moderately strong, is hardly visible from without.

Length, 42·5; breadth, 20·5; aperture, length 16, width 9; length of canal, 11.

Locality.—Gastropod-bed of the River Murray Cliffs, near Morgan.

4. Peristernia Murrayana, *spec. nov.*

Shell ovately fusiform, whorls six and a half, of rapid increase; spire short conic, ending in a moderately large obtuse apex of two whorls, 1·5 mill. in diameter; for about a third of a whorl from the margin of the pullus the surface is slenderly costated, the posterior whorl is globose, with the tip central and partially immersed.

Whorls bluntly angulated and tuberculated at the anterior suture, the posterior slope very wide and slightly *concave;* tubercles small, eight to a whorl, trisected by three strong liræ; ornamented on the anterior half of the whorl with three or four strong spiral threads, with threadlets in the furrows, the posterior slope with fine spiral and transverse striæ hardly or not at all visible to the unaided eye.

Last whorl subangulated and tuberculated at the periphery, at the base suddenly contracted into a narrow, nearly closed, sinistrally bent canal. Aperture oval; outer lip thin, slightly effuse at the front, faintly lirate within; columella with an oblique conspicuous plait arising from the pillar, and with two to four small linear ridges behind.

Length, 25·5; breadth, 12·25; aperture, length 9, width 6; length of canal 6.

Locality.—One of the commonest fossils in the River Murray Cliffs near Morgan.

This species is much like *P. Morundiana*, but is only about half the size, and differs by its more rapidly increasing whorls, smaller and trisect tubercles, almost smooth on the posterior

slopes, by its more sharply bent attenuated beak, by the posterior denticles on the columella, and by its larger and different pullus.

5. Peristernia altifrons, *spec. nov.* Plate x., fig. 1.

Shell fusiform, stout (apex wanting); whorls five, rapidly enlarging; posterior whorls shouldered, the posterior slope very narrow and at first inclined inwards, ornamented by equal liræ and cancellated by straight striæ; with increase of growth the whorls become increasingly convex and plicated. Last whorl tumid in the middle, with seven narrow, somewhat humpy, curved plications on the medial region, spirally lirate. Liræ equidistant, about 20 on the penultimate whorl, with wide interspaces, but on the medial and anterior areas and on the base of the last whorl they are alternately large and small.

Aperture oval; columella with a strong fold at the front, decurrent on the canal; canal stout, apparently of moderate length, curved to the left and reverted.

Length, incomplete, 38; breadth, 18; aperture, length 15, width 7.

Locality.—Gastropod-bed of the River Murray Cliffs.

6. Peristernia Aldingensis, *spec. nov.* Plate viii., fig. 8*a*, 8*b*.

Shell fusiform, stout, with a high conical spire, ending in a small blunt mammilate apex of two and a half whorls; for about a third of a whorl from the junction with the spire the surface is furnished with linear transverse plications.

Whorls eight and a half, increasing somewhat rapidly, convex, with seven large rounded oblique ribs on each whorl, which die out on the base of the last whorl, separated by broad open furrows. Surface scored by coarse angular spiral threads (about ten on the penultimate whorl), roughened on the edge by close-set transverse striæ, parted by wider furrows, with or without a spiral threadlet. Last whorl with a rounded base prolonged into a longish, sinistrally curved and slightly reverted beak.

Aperture round; outer lip strongly lirate within; columella with a strong oblique plait at the top of the pillar, having a tooth-like termination; a smaller plait is occasionally present behind it.

Fig. 8*b* represents an extreme elate individual with more defined costations.

Length, 35; breadth, 14·5; length of aperture, 10; of canal, 8·5.

Localities.—Turritella clays, Blanche Point, Aldinga Bay; and Adelaide bore.

7. Peristernia affinis, *spec. nov.* Plate xi., fig. 7.

Shell like *P. transenna* but narrower, with strong angular plications, which impart a more convex outline to the whorls. Whorls six, apex decollated; body whorl with twelve transverse ribs, acutely nodulate at the intersection with the liræ. Aperture oval; columella with a strong oblique twist; canal shorter than in *P. transenna*, oblique and slightly twisted; outer lip varicosely thickened a little beyond the edge; stoutly lirate within.

Length, 16·5; breadth, 7; length of aperture and canal, 9.

Locality.—Table Cape (*R. M. Johnston!*).

8. Peristernia transenna, *T. Woods.* Plate xi., fig. 10.

Fusus transenna, T. Woods, Proc. Roy. Soc. Tasm. for 1876, p. 94.

Shell ovately fusiform with a flat spire, apex wanting; whorls five, flatly convex, subangulate above, equally and widely latticed with arched transverse and spiral threads, raised into short, small conical nodulations at the intersection, the interstices cancellated. There are 24 transverse threads on the body whorl, and five spiral threads on the middle portion of the body whorl.

Aperture oval; columella with a strong oblique twist ascending from the pillar; canal wide, of moderate length, oblique, and slightly reverted; outer lip ?

Length (incomplete), 20; breadth, 9; length of aperture and canal, 12.

Locality.—Table Cape (*R. M. Johnston!*).

9. Peristernia lintea, *spec. nov.* Plate viii., fig. 11.

Shell ovately fusiform, with a moderately high conical spire ending in a blunt apex of one and a half sub-globose whorls; whorls below the apex four, ornamented by fine spiral threads with two or three striæ in the interspaces, crossed by slender arched growth lines and very fine striæ; last whorl sometimes with short undulations at the periphery.

Outer lip thin, lirate within; columella with a conspicuous oblique fold at the top of the canal succeeded by two or three small ones.

Length, 28; breadth, 10; length of aperture, 9; of canal, 11.

Locality.—Lower beds at Muddy Creek.

This species is distinguished from *Fasciolaria Tenisoni* by its more ventricose body whorl, fine spiral ornament, and slender bent canal.

10. Peristernia apicilirata, *spec. nov.* Pl. ix., fig. 14.

Shell small, elongate-fusiform, spire high, of sub-gradated whorls, ending in a large hemispheric apex radially finely

ribbed; whorls below apex four, convex, bicarinated medially, transversely costated.

Costæ thick, seven or eight to a whorl, distant, raised into blunt tubercles on the keels, faintly continued on to the base of the last whorl. Spiral ornament consists of two strong medial threads forming keels, a slender thread on the posterior slope, and one or two at the front of the spire whorls; the whole surface crossed by curved striæ of growth.

Aperture oval; outer lip thin; columella obliquely truncated by a spiral plait; canal very short, wide, curved, and reverted.

Length, 5; breadth, 2; length of aperture and canal, 2.

Localities.—Turritella clays at Blanche Point, Aldinga Bay; clayey-green sands, Adelaide bore.

11. Peristernia actinostephes, *spec. nov.* Plate ix., fig. 10.

Similar to *P. apicilirata*; whorls below apex five, regularly convex, with thick humpy costæ, about nine to a whorl, with equal, equidistant spiral threads (six on the penultimate whorl). Outer lip smooth or lirate within; base a little more contracted. Aperture oblong.

Length, 7; breadth, 2·5; length of canal and aperture, 3.

Localities.—Same as the last.

12. Peristernia succincta, *T. Woods.*

Trophon succinctus, Tenison-Woods, Proc. Lin. Soc., N.S.W., vol. iv., p. 16, tab. 4, figs. 6, 6*a*, 1879.

Shell elongate-turbinate, apex blunt, of one and a half small subglobose whorls, the tip somewhat oblique; whorls below the apex 5, convex, somewhat flattened behind; encircled with distant sharp high keels, rudely rugged at the edge, the wide concave interspaces marked with transverse growth-lines and fine spiral striæ.

Keels on the penultimate whorl five or six, of which the two or three medial ones are a little larger and more distant than the rest.

Last whorl somewhat tumid; aperture nearly circular; outer lip slightly dilated, thickened and closely grooved within, bevelled to a sharp undulate edge; inner lip continuous with the outer lip, with a thin erect margin; a strong, oblique plait at the junction with the canal, with a few small denticles behind; canal of moderate length, wide, stout, bent to the left, and much reverted.

Length, 33; breadth, 20; aperture, length 13·5, width 9; canal length 10, width 4·5.

Locality.—Lower beds at Muddy Creek.

13. Peristernia interlineata, *spec. nov.* Plate vi., fig. 1.

Shell ovately fusiform, with a moderately high subgradated spire, ending in a blunt apex of one a half subglobose whorls, the tip depressed. Whorls below the apex four, convex, equally contracted at both sutures, spirally ridged.

Ridges angular, acute, three or four of which on the median portion of the spire whorls forming keels; the broad concave furrows with a thread, crossed by straight distant striæ. On the body whorl the ridges are more serrately cut by the transverse striæ than those are on the spire.

Aperture oval; outer lip thin, closely and strongly lirate within; peristome continuous; inner lip with a thin erect margin, a strong oblique anterior plait, and a few denticles. Canal long, slender, twisted to the left and reverted.

Length, 23; breadth, 11; length of aperture 8·5, of canal 7.

Locality.—Lower beds at Muddy Creek.

Related to *P. succincta* by its ornament, but it is elongated and has a long tapering canal.

14. Peristernia subundulosa, *spec. nov.* Plate viii., fig. 12.

Shell similar to *P. interlineata* but the whorls are regularly convex; the spiral liræ flatly rounded, no intersticial thread in the wider interspaces (about ten on the penultimate whorl); liræ undulose by reason of the obscure, broad, transverse wrinklings. There are two small plaits and a tooth on the columella, in addition to the prominent fold at the junction with the canal.

Length, 23·5; breadth, 11; length of aperture 9, of canal 7.

Locality.—Lower beds at Muddy Creek.

Genus Tudicula.

SYNOPSIS OF SPECIES.

Periphery truncated and costated.	1.	*T. costata.*
rounded, undulose.	2.	*T. turbinata.*
angulated, plain.	3.	*T. angulata.*

It is noteworthy that the above-named fossils conform more with the type of the genus (*T. spirillus*) than does any of the living species associated therewith; the recent species, which number five, are confined to the Indo-Australian region. Each of the fossil species has very distinctive characters as compared with *T. spirillus.*

1. Tudicula costata, *spec. nov.* Plate x., fig. 9.

Shell globosely conical, with a very short conical spire; apex mamillate of two whorls, erect, and a little lopsided. Surface ornamented with numerous spiral threads alternately large and small and transverse striæ. Last whorl truncated at the

periphery, bearing nine curved somewhat humpy costæ, which are crenulated by about six strong spiral threads; base short, rounded, contracted into a long, straightish, slender beak.

Aperture oval; outer lip with a slight callous thickening on the margin, smooth within; inner lip continuous with the outer lip, much thickened, but not spreading, decurrent on the pillar; with a stout oblique plait at the summit of the pillar and a few denticles behind.

Length, 27·5; breadth, 19; aperture, length 12, width 7; length of canal, 13.

Locality.—In a well sinking on the River Murray Desert.

2. Tudicula turbinata, *spec. nov.* Plate x., fig. 7.

Shell globosely conical, with a short conical spire of flatly depressed whorls; apex mamillate, erect, of two smooth whorls. Surface ornamented with angular, distant, spiral threads; interspaces angular, with a medial threadlet, coarsely striated spirally, and finely striated transversely.

Last whorl rather ventricose, especially towards the aperture, rounded at the periphery, provided with short thick costæ, ten in number, crenulated by three or four strong liræ; base short, rounded, contracted into a long, straight, slender beak.

Aperture oval; outer lip slightly incurved behind the periphery, where it is much thickened, margin crenulated and scored for a short distance within; inner lip continuous with the outer lip, very much thickened, but not spreading, with a stout oblique plait at the summit of the pillar and five or six denticles behind.

Length, 27 (canal incomplete); breadth, 23; aperture length, 20; width, 11; length of canal, 10 (incomplete). A young specimen measures—length, 22·5; breadth, 8; length of aperture, 8; of canal, 10.

Localities.—Gastropod-bed of the River Murray cliffs, near Morgan; lower beds at Muddy Creek *(J. Dennant!)*.

3. Tudicula angulata, *spec. nov.* Plate x., fig. 9.

Shell globosely conical, with a short, flatly depressed spire, apex erect mamiliate of two smooth whorls. Last whorl angulated at the periphery, ornamented with spiral liræ, irregularly crenulated by oblique growth lines; liræ on posterior slope, nearly equal and equidistant, narrow, rounded, and depressed, the interspaces a little wider; on the front and base the liræ are stronger, wide apart, the interspaces occupied by three or four threadlets.

Aperture as in *T. turbinata*, except that there are no denticles behind the columella-plait.

Length, less the canal, 16; breadth, 15·5; aperture, length, 11; width, 6·5.

Locality.—Lower beds at Muddy Creek.

Genus Dennantia.

Name in compliment to Mr. J. Dennant, F.G.S., who has placed his very extensive collection of the Muddy Creek fossils at my service.

Type.—Fusus Ino, *Tenison Woods.*

Generic Characters.—Shell elongate, turriculate; aperture prolonged into a moderately long, sharply bent and reverted canal; columella with an oblique fold ending at the point of the pillar in a tooth-like projection; base of body whorl with a revolving ridge coincident with the posterior angle of the mouth and ending in a pointed projection on the thin outer lip.

This genus combines the form of *Fastigiella* with the aperture of *Leucozonia* and the canal of *Peristernia.*

SYNOPSIS OF SPECIES.

Lirately ridged or striated.	1. *D. Ino.*
Spirally furrowed.	2. *D. cingulata.*

1. Dennantia Ino, *T. Woods.* Pl. xii., figs. 1*a*—1*c* and 3.

Fusus Ino, *Tenison-Woods*, Proc. Lin. Soc., N.S.W., vol. iv., p. 13, tab. 3, fig. 10, 1879.

Shell elongate-turriculate, rather stout; whorls eight and a half, of moderate increase, ending a rather large obtuse apex of two and a half smooth tumid whorls with the tip depressed and centrally immersed.

Anterior whorls convex, suture well impressed, encircled with slender, acute liræ (about seven on the penultimate whorl, but the number is very variable), the wide interspaces with spiral threads and microscopic transverse closely-set striæ, arched growth-lines and indistinct folds occur at irregular intervals.

Body whorl regularly convex to the basal keel, then suddenly contracted into a moderately long twisted beak.

Aperture ovate; outer lip thin, interrupted by the projection of the basal keel, behind which it is slightly incurved, lirate within; inner lip defined behind by an impressed line continued to near the extremity of the canal, provided with an oblique fold arising from a short denticle at the junction with the canal.

Length, 26·5; breadth, 10; length of aperture 8, of canal 6.

Localities.—One of the commonest fossils in the lower beds at Muddy Creek; blue clays at Schnapper Point; Gastropod-bed of the River Murray Cliffs, near Morgan.

Mr. Tenison-Woods founded this species on a young example

with much of the outer lip broken away, and as the whole aspect is so totally different from a perfect matured shell it was needful to refigure the species, and for this purpose I selected a specimen which agreed the best with the original diagnosis. The species is subject to much variation; examples from the River Murray Cliffs are much shorter and broader than the type, an extreme form having a breadth equal to half the length. Fig. 3 on tab. 12 represents a variety common at Schnapper Point, in which the encircling ridges are very prominent and angular, and somewhat roughened by the intercrossing of growth-folds.

2. Dennantia cingulata. Plate xii., figs. 2 and 5*a*—5*b*.

A rather more slender form than *D. Ino*, with linear encircling furrows. In the form represented by fig. 2, the broad surface is simply scored by lines, whilst in the form represented by fig. 5 the grooving is deep and moderately broad, though not so wide as the rounded ridges. Now and again a thread appears in the furrows.

Locality.—Blue clays, Schnapper Point.

Genus Leucozonia.

SYNOPSIS OF SPECIES.

Shell pyriform; spiral striæ microscopic. 1. *L. micronema.*
Shell ovate-globose; spiral ornament of fine distant threads and striæ. 2. *L. staminea.*
Shell globosely turbinate; liræ stout, close. 3. *L. tumida.*

1. Leucozonia micronema, *spec. nov.* Plate ix., fig. 12.

Shell small, pyriformly ovate, apex mamillate of one and a half whorls, the tip obliquely depressed. Whorls below the apex three, slightly overlapping behind, concealing the suture; microscopically wavy-striated in a spiral direction, the striæ hardly visible on the base of the last whorl; marked transversely by striæ and linear folds of growth.

Aperture elongate-oval; outer lip lirate within, margin (?); columella with six narrow, nearly transverse plaits, rather close together, decreasing in size from the front, the anterior one much the largest; canal short, stout, wide, straight, a little upturned at the end.

Length, 11; breadth, 6; length of canal and aperture, 8.

Locality.—Blue clays at Schnapper Point.

This little fossil is apparently congeneric with *Buccinum rostratum*, Wood, the generic position of which is very doubtful, but placed by Gray in his genus *Leucozonia* under the subgeneric title of *Lagena*.

2. Leucozonia staminea, *spec. nov.* Pl. ix., fig. 13.

Shell small, ovately globose, apex a little eccentric, mamillate of one and a half whorls, flattened down at the tip. Whorls below the apex four; ornamented with distant, slender spiral threads, the interspaces about 1 mill. wide on the body whorl, occupied by close fine striæ; a few of the liræ towards the base are irregularly granulated. Aperture oval; outer lip thin, lirate within; columella with three close, equal, slightly oblique plaits at the front, each ending in a tooth-like projection, a narrow umbilical chink behind the pillar; canal short, bent to the left, and reverted.

Length, 12; breadth, 7·5; length of aperture and canal, 8.

Locality.—Blue clays at Schnapper Point.

3. Leucozonia tumida, *spec. nov.* Pl. xiii., fig. 2.

Shell small (immature?), globosely turbinate, ventricose; apex mamillate of two subglobose whorls; whorls four in all; last whorl ventricose, with equidistant angular threads, finely cancellated in the furrows by two or three spiral threadlets and transverse striæ.

Outer lip faintly lirate within; three nearly equal sized plaits at the fore part of the columella; canal short, much twisted, and reverted.

Length, 10·5; breadth, 7·5; length of aperture and canal, 8.

Locality.—Lower beds at Muddy Creek. (*J. Dennant!*).

Genus Zemira.

1. Zemira præcursoria, *spec. nov.* Plate xi., fig. 5.

Shell ovate, stout; whorls five and a half, ending in a smooth mamillate apex, rounded, deeply channelled at the suture; sculptured with revolving incised lines (about ten on the penultimate whorl), the posterior of which are more prominent; whole surface slightly wrinkled and striated transversely.

Last whorl with a revolving channel in an alignment with the posterior angle of the aperture, and terminating at the anterior third of the outer lip in a tooth-like projection; in front of the channel are six prominent, rounded, spiral ribs much wider than the interspaces, whilst the posterior area is sculptured as the penultimate whorl.

Aperture ovate, slightly angulated posteriorly; inner lip with a slight callous extension, partially concealing the narrow umbilicus, which is margined by a strong, rounded, striated rib; columella smooth, compressed, terminating in a transverse tooth-like fold; anterior canal reduced to a mere notch; outer lip thin, the part anterior to the tooth-like projection is crenately wrinkled.

Length, 21; breadth, 13; length of aperture, 14.

Locality.—Lower beds at Muddy Creek (*J. Dennant !*).

The discovery of a fossil species of *Zemira* is of interest from the circumstance that the genus has hitherto been known by one species, *Z. australis*, Sow., inhabiting the temperate seas of Eastern Australia, from which it differs by its longer spire and narrower body whorl, narrower sutural sulcus, and by the more pronounced encircling ridges.

Genus Pisania.

SYNOPSIS OF SPECIES.

Turriculate, slenderly cancellate, canal long.
1. *P. rostrata.*

Ovate-fusiform, coarsely cancellate, whorls convex.
2. *P. semicostata.*

thick oblique costæ, whorls convex.
3. *P. obliquecostata.*

whorls bicarinate, cancellated.
4. *P. purpuroides.*

Ovate-conical, strongly costated and lirate, margined at the suture.
5. *P. brevis.*

1. Pisania rostrata, *spec. nov.* Plate x., fig. 10.

Shell elongate-ovate, fusiform, with a high conical spire, abruptly attenuated at the base into a stout beak (long for the genus). Apex very small of two rounded whorls, the tip obliquely depressed. Whorls below the apex six, convex, spirally lirate with depressed rounded threads alternately large and small (about 20 on the penultimate whorl); posterior whorls with crowded slender costæ, about 24 on the antepenultimate whorl, which vanish at the penultimate whorl. Last whorl varicosely dilated behind the aperture; base rounded, rather sharply contracted into a broad, slightly oblique, much-upturned beak.

Aperture oval-oblong; outer lip with a thin margin, strongly ridged within; inner lip with a circumscribed callous cover continued down the pillar, behind which is a shallow narrow groove; a bifid callosity on the body wall near the posterior angle of the aperture; a strong oblique plait ends in a blunt tooth-like projection at the top of the canal.

Length, 25; breadth, 10; length of aperture, 8; of canal, 5.

Locality.—Upper beds at Muddy Creek (*J. Dennant !*)

This species is conspicuous amongst living congeners by its abruptly contracted base and long beak.

2. Pisania semicostata, *spec. nov.* Plate iv., fig. 9.

Shell oblong-fusiform, similar to *P. rostrata*, with more

rapidly increasing whorls, base less abruptly attenuated, canal shorter, costæ fewer and stouter. Whorls below the apex four, costæ slightly curved, rounded, about as wide as the interspaces, 16 on the penultimate whorl, obsolete or only faintly developed on the body whorl.

Length, 19·5; breadth, 8·5; length of aperture, 7; of canal, 3.

Locality.—Upper beds at Muddy Creek (*J. Dennant!*).

3. Pisania obliquecostata, *spec. nov.* Plate ix., fig. 7.

Shell small, narrow-ovate, thick; whorls five, slightly convex, strongly costated and lirate. Costæ rather narrow, rounded, high, distant, oblique, about eight to a whorl; liræ stout, distant, four on the penultimate whorl, more or less tuberculated on the costæ.

Aperture varicosely dilated; six stout denticles within the outer lip; columella truncated by an oblique fold; canal short, stout, a little oblique.

Length, 7; breadth, 3; length of aperture and canal, 3·5.

Locality.—Upper beds at Muddy Creek.

4. Pisania purpuroides, *Johnston.* Plate xi., fig. 6.

Ricinula purpuroides, R. M. Johnston, Proc. Roy. Soc., Tasmania for 1879, p. 33.

Shell small, solid, obtusely and narrowly ovate. Whorls six, those of the spire obtusely angulated and bicarinated, with an impressed suture, transversely costated, spirally lirate, and finely cancellated between the costæ. There are two strong encircling carinæ, one median and a second about midway to the anterior suture, whilst a third, less prominent, is at the posterior suture; in the concave interspaces between the liræ there are one, two, or three fine spiral threads.

Last whorl moderately convex, with about seven equal and equidistant stout liræ, having about three threads in each interspace.

The costæ (eleven on the penultimate and eight on the body whorl) are raised into blunt nodulations at the points of intersection with the stouter liræ.

Aperture narrowly ovate; outer lip varicosely dilated behind, slightly crenulated on the acute margin, and with seven tooth-like ridges within; inner lip spreading over the columella and thinly continuous with the outer lip, with one elongated plication near the posterior angulation and about eight small irregular callosities thence to the point of the pillar. Canal short, wide, oblique, and slightly reverted.

Length, 12; breadth, 6; length of aperture and canal, 7.

Locality.—Table Cape, Tasmania (*R. M. Johnston!*); lower beds at Muddy Creek.

5. Pisania brevis, *spec. nov.* Pl. ix., fig. 8.

Shell ovately conical; whorls six, angularly convex, a little contracted in front, strongly costated and lirate.

Costæ narrow, acutely rounded, distant, slightly oblique, about ten to a whorl, more or less crenulated by the liræ. Liræ on the body whorl alternately stout and slender, two very stout ones on the angulation; suture margined by two confluent liræ.

Aperture somewhat varicosely dilated; outer lip lirate within; columella truncated by an oblique fold behind, which is denticulated; canal short, stout, slightly oblique.

Length, 10; breadth, 5·5; length of aperture and canal, 6.

Locality.—Upper and lower beds at Muddy Creek.

Genus Cantharus.

1. Cantharus varicosus, *spec. nov.* Plate viii., fig. 10.

Shell ovate, subfusiform, whorls five and a half, flatly convex, variced, of rapid increase, apex of one and a half small smooth rounded whorls, the tip immersed.

Posterior whorls spirally deeply grooved; anterior whorls with thick spiral ridges, about eight on the penultimate whorl, broken up into thick, elongate, regularly disposed granules, with a slender thread in the narrow interspaces; on the body whorl the granulation is not so regular, and the interstitial thread is conspicuous. Varices five.

Aperture oblong; outer lip varicosely dilated, margin sharp, with a thick, stoutly denticulate band within, the front sharply curved to the short, sinistrally curved, emarginate beak; inner lip and pillar with a thin porcellanous coat tuberculate all over.

Length, 17·5; breadth, 9·5; length of aperture and canal, 12.

Locality.—Turritella-clays, Blanche Point, Aldinga Bay.

Genus Phos.

SYNOPSIS OF SPECIES.

Apex acutely conical.
  Whorls convex, a little flatted behind.
    1. *P. tardicrescens.*
Apex subcylindrical or turbinate.
  Whorls convex, not shouldered.
    Costæ slender, liræ strong. 2. *P. liræcostatus.*
    Costæ feeble, liræ faint. 3. *P. cominelloides.*
    Costæ and liræ strong. 4. *P. Gregsoni.*
  Whorls shouldered and tuberculated.
    5. *P. tuberculatus.*
Apex mamillate, obtuse.
  Whorls tabulated, aperture variced. 6. *P. variciferus.*

1. Phos tardicrescens, *spec. nov.* Plate x., fig. 12.

Shell pyramidal, stout, whorls eleven, convex, closely ribbed and lirate; apex conical of five smooth slightly convex whorls of very slow increase.

Whorls below those of the apex of very slow increase, the posterior ones narrow, and regularly convex, gradually becoming more and more depressed behind. Last whorl small and narrow, with a high slightly declining and rounded shoulder defined by a blunt angulation; base short, rounded, ending in a short, strongly twisted, reverted beak.

Transverse ribs slightly oblique, low, broadish, elevated at the shoulder of the anterior whorls into ill-defined cuneate tubercles, 14 to a whorl. The spiral ornament cosists of about 20 thin threads, unequal and inequidistant with wider interspaces; the intercostal spaces are rudely cancellated.

Aperture round; outer lip thin, with about 20 spiral ridges within.

Length, 21; breadth, 11; length of aperture and canal, 10.

Locality.—Lower beds at Muddy Creek (*J. Dennant!*).

2. Phos liræcostatus, *T. Woods.* Plate xi., fig. 12.

Cominella lyræcostata, *T. Woods*, Proc. Roy. Soc., Tasm., for 1876, p. 108.

Shell long, narrow, fusiform, closely and narrowly ribbed, conspicuously lirate; whorls eight, flatly convex; apex blunt, turbinated of three rounded smooth whorls, the anterior two high, the terminal one small.

Whorls below the apex short and convex, of very slow increase; suture deep and margined. Last whorl small, with a longish rounded base, ending in a twisted, slightly reverted beak.

Transverse ribs narrow, rounded, crenulated, about 16 to a whorl, more conspicuous on the posterior whorls, almost obsolete on the last whorl. Liræ very prominent, distant, six to ten on the penultimate whorl; intercostal spaces finely cancellate. Aperture oval; outer lip acute, faintly lirate within.

Length, 19; breadth, 7; length of aperture and canal, 7.

Locality.—Table Cape (*R. M. Johnston!*).

3. Phos cominelloides, *spec. nov.* Plate iv., fig. 11.

Shell elongate-pyramidal; whorls seven and a half, convex, distantly ribbed and faintly lirate; apex blunt, conoidally cylindrical, of three and a half smooth whorls. Whorls below those of the apex narrow at first, flatly convex, increasing in convexity towards the front, with a slight narrow concave depression in front of the suture, defined by a blunt angulation.

Last whorl small, with a rather short rounded base ending in a twisted reverted, emarginate beak.

Transverse ribs, narrow, rounded, ill-defined, except on the posterior whorls, about 12 to a whorl. Spiral liræ thick, depressed, inconspicuous, about seven on the medial and posterior areas of the penultimate whorl; obsolete on the middle of the last whorl, but prominent on its base. Whole surface closely transversely striated.

Aperture oval; outer lip thin, slightly insinuated behind the shoulder, without, about 20 slender spiral ridges within.

Length, 20; breadth, 8; length of aperture and canal, 10.

Locality.—Lower beds at Muddy Creek.

4. Phos Gregsoni, *spec. nov.*

Shell similar to *P. cominelloides*, but the whorls are subangularly convex by reason of the largely developed costæ; the basal whorl is narrower, and the apex is different, which consists of three high turbinated whorls, and is rendered conspicuous by the disproportionate increase in size of the whorl next below it.

The costæ are rounded, distant, eight to a whorl, vanishing behind the shoulder, but are continued to the base of the body whorl. Spiral liræ, about six, depressed, equal and equidistant on the posterior slope of the penultimate whorl, about twelve alternately large and small on the rest of the whorl. Outer lip not insinuated behind the shoulder.

Length, 19; breadth, 8·5; length of aperture and canal, 8·5.

Localities.—Jemmy's Point and Cunninghame, Gippsland (*W. H. Gregson!*).

Species-name in compliment to Mr. Gregson, of Bairnsdale, to whom I am indebted for the gift of this and other species of the Gippsland Tertiary beds.

5. Phos tuberculatus, *spec. nov.* Plate x., fig. 5.

Shell ovately pyramidal, stout, costated and lirate, with a rather high gradated spire, ending in a subcylindrical apex of three smooth whorls. Whorls below the apex, five, of rather rapid increase, short, with a high rounded shoulder concave behind.

Costæ, about 11 to a whorl, thick, rounded, equidistant, prominent only on the angulation, faintly prolonged to the anterior suture of the spire whorls; crenulated by conspicuous liræ; liræ on body whorl confined to the angulation and to the base.

Aperture oblong; outer lip acute, smooth within; beak short, twisted, reverted, and emarginate.

Length, 22; breadth, 10·5; length of aperture and canal, 11.

Locality.—Upper beds at Muddy Creek (*J. Dennant!*).

6. Phos (?) variciferus, *spec. nov.* Pl. xi., fig. 3.

Shell turriculate, with a high gradated spire, ending in a small obtuse apex of one and a half convex whorls, the extreme tip of which is somewhat obliquely flattened down.

Whorls below those of the apex six, of very slow increase, sharply angled a little beyond the middle, with a straight upward slope to the posterior suture, slightly contracted into the anterior suture.

Spiral liræ, thick, rounded, five on the posterior slope and about eight stronger ones on the front, crossed by close-set fine striæ. Transverse costæ, slender, sharp, bent at the keel, about 20 to a whorl, raised into small, blunt knobs on the keel and crenulated by the liræ, especially on the anterior slope; on the last whorl the costæ descend from the keel in a sigmoid curve to the beak.

Last whorl varied immediately behind the outer lip, and besides there are variceal imbrications, usually about two to a whorl.

Aperture narrow oblong; outer lip thin, faintly lirate within; inner lip continuous with the outer lip at all stages of growth, its edge upraised, markedly so on the pillar, with an umbilical chink at the origin of the canal, smooth within. Canal short, open, twisted to the left and much reverted.

Length, 22; breadth, 9·5; length of canal and aperture, 11·5.

Localities.—Lower beds at Muddy Creek; blue clays at Schnapper Point; Gastropod-bed of the River Murray Cliffs, near Morgan.

The genus under which to class this species has been selected with some hesitation. Its shape and variceal characters approach it to *Epidromus*, particularly through *E. turritus*, mihi, but the distortion of the short beak is adverse to such association. The entire peristome and varied outer lip suggest a reference to *Nassaria*, which has, however, teeth on the pillar and much different shape; with *Phos* it agrees in contour and in the short twisted beak, but it lacks the characteristic basal groove of the pillar, and otherwise differs by its varied and entire aperture.

FAMILY NASSINÆ.

Genus Nassa.

SYNOPSIS OF SPECIES.

Inner lip with a rugose callus; outer lip denticulated within, with a marginal varix (subg. Hima). 1. *N. Tatei.*

Inner and outer lips smooth; varied externally (subg. Phrontis). 2. *N. crassigranosa.*

Inner lip with a large rugose callus; outer lip dentate, not variced externally (subg. Niotha). 3. *N. sublirella.*

1. Nassa Tatei, *T. Woods.* Plate xii., fig. 9.

Nassa Tatei, Tenison Woods, Proc. Lin. Soc. N.S.W., vol. iii., p. 230, t. 21, fig. 13, 1878; id. vol. iv., t. 2, f. 2, 1879.

Shell ovate or elongate-ovate of eight regularly increasing whorls; apex mamillate of four smooth regular whorls; the rest of the spire whorls regularly convex, with an impressed suture, cancellated with sharp raised costæ and flat spiral liræ granulated at the intersections. There are about 15 to 20 costæ on the penultimate whorl, but rapidly diminish in number posteriorly; there are seven principal liræ on the penultimate whorl, sometimes with a thread in one or more of the interspaces, the two contiguous liræ next the suture are usually less stout than the rest.

Aperture oblong-ovate, the outer lip being narrowly truncate at the front. Outer lip with a marginal varix, but elongate examples, such as figured by me, have a varix at or about in an alignment with the columella, inner lip expanded and reflected with a conspicuous posterior plait, and one or more rugosities at the front.

Length, from 7·5 to 8·5; breadth, 3·5.

Localities.—Lower beds, very rare in upper beds, at Muddy Creek; Gastropod-bed of the River Murray Cliffs, near Morgan; blue clays at Schnapper Point, Port Philip.

This species is the fossil analogue of *N. compacta*, Angas, which is the Australian representative of the European *N. incrassata*. *N. Tatei* is more elevated, has numerous and finer costulations than *N. compacta*, and moreover has a large pullus of four whorls, and not of two. Professor Hutton in Proc. Lin. Soc., N.S.W., 1886, p. 481, has referred his *N. socialis* to this species; but the two shells are distinct; the New Zealand fossil has the whorls chanelled at the suture, and has usually only four liræ on the penultimate whorl, of which the one next to the posterior suture is small; other less conspicuous distinctive characters are present.

The illustration of this species by Mr. Woods on plate 21, fig. 13, op. cit., is very imperfect, but that on plate 2, fig. 2, op. cit., very well represents an exceedingly immature shell. The figure accompanying this description is that of a senile example of rather unusual length.

2. Nassa crassigranosa, *spec. nov.* Pl. xii., figs. 6*a*, 6*b*.

Shell stout, ovately conical; spire regular (except in senile examples) of rapidly decreasing subgradated whorls; apex acute, of two smooth minute whorls. Whorls 7; the ordinary spire

whorls convexly angular, with three nodular bands, one at the posterior suture, one median, and the third at about half the distance between the keel and the anterior suture.

Last whorl transversely obliquely costated and nodulated by spiral ridges. Costæ about 10—12; liræ eight, the one next the suture is separated from the keel by a wider space than that which intervenes between the succeeding ones.

Aperture oval, large, varied externally; outer lip smooth within; inner lip smooth, slightly reflected, callously extending posteriorly; columella sharply and obliquely truncated.

Senile examples occur which have added another whorl (as fig. 6*b*), and by reason of the posterior varix has a somewhat distorted spire.

Dimensions of an ordinary full grown example—Length, 14; breadth, 8·5. Of a senile example—Length, 17; breadth, 10.

Localities.—One of the most characteristic fossils in the upper beds at Muddy Creek, very rare and small in the uppermost portion of the lower series; Jemmy's Point, Cunninghame and other localities in Gippsland (*W. H. Gregson!*).

This species seems to resemble *N. granifer*, Kiener, but the callus of the inner lip is very restricted.

3. Nasa sublirella, *spec. nov.*

Shell small, ovate, with the costæ cut into nodules by revolving ridges, four on the penultimate whorl; outer lip tuberculate within, the posterior tubercle much larger than the rest; inner lip callously reflected, tuberculate. It resembles stumpy specimens of *N. lyrella*, Beck, but the body whorl is not so inflated, and the spire is longer; the spiral ribs on the body whorl are usually eight, not ten, and the nodulations are larger and well defined, not confluent, as is generally the case in *N. lyrella*; and whilst in the latter species the costæ towards the lip usually fade away before reaching the base, in the fossil species they are continued to the base.

Length, 9·5; breadth, 6.

Locality.—Upper beds at Muddy Creek.

Explanation of Plates.

N.B.—The figures are of the natural sizes, except when otherwise stated.

Plate I.

1. Typhis disjunctus, *Tate.* Muddy Creek. Enlarged.
2. Typhis acanthopterus, *Tate.* Schnapper Point. Enlarged.
3. Murex (Ocinebra) biconicus, *Tate.* Murray Desert.

4. Murex (Pteronotus) trinodosus, *Tate.* Muddy Creek. Enlarged.
5. Murex (Ocinebra) prionotus, *Tate.* Adelaide. Enlarged.
6. Typhis evaricosus, *Tate.* Muddy Creek. Enlarged.
7. Murex (Pteronotus) rhysus, *Tate.* Schnapper Point.
8. Murex (Pteronotus) velificus, *Tate.* Schnapper Point.
9. Murex (Pteronotus) manubriatus, *Tate.* Adelaide.
10. Typhis laciniatus, *Tate.* Muddy Creek. Enlarged.
11. Murex (Pteronotus) calvus, *Tate.* Aldinga.
12. Murex (Pteronotus) bifrons, *Tate.* Adelaide.

Plate II.

1. Trophon hypsellus, *Tate.* Adelaide. Much enlarged.
2. Murex (Ocinebra) tridentatus, *Tate.* Aldinga. Much enlarged.
3. Trophon icosiphyllus, *Tate.* Adelaide. Much enlarged.
4. Murex (Chicoreus) Adelaidensis, *Tate.* Adelaide. Enlarged.
5. Murex (Chicoreus) lophœssus, *Tate.* Schnapper Point.
6. Murex (Chicoreus) tenuicornis, *Tate.* Adelaide. Enlarged.
7. Murex (Chicoreus) Dennanti, *Tate.* Muddy Creek. Slightly enlarged.
8. Rapana aculeata, *Tate.* Schnapper Point.
9. Murex (Chicoreus) basicinctus, *Tate.* R. Murray Cliffs.
10. Murex (Rhinacantha) asteriscus, *Tate.* Muddy Creek. Slightly enlarged.
11. Murex (Rhinacantha) pachystirus, *Tate.* R. Murray Cliffs. Slightly enlarged.
12. Murex (Chicoreus) amblyceras, *Tate.* Schnapper Point. Slightly enlarged.

Plate III.

1. Murex (Ocinebra) asperulus. *Tate.* Schnapper Point.
2. Murex (Ocinebra) camplytropis, *Tate.* Schnapper Point.
3. Murex (Phyllonotus) sublævis, *Tate.* Aldinga.
4. Murex (Ocinebra) monotropis, *Tate.* Adelaide. Much enlarged.
5. Murex (Ocinebra) crassiliratus, *Tate.* Muddy Creek. Enlarged.
6. Murex (Chicoreus) Hamiltonensis, *Tate.* Muddy Creek.
7. Sipho labrosus, *Tate.* Enlarged. Muddy Creek.
8. Sipho crebrigranosus, *Tate.* Enlarged. Muddy Creek.
9. Fusus incompositus, *Tate.* Aldinga. Enlarged.
10. Fusus Aldingensis, *Tate.* Aldinga. Enlarged.
11. Fusus tholoides, *Tate.* Enlarged.

12. Murex (Ocinebra) alveolatus, *Tate*. Muddy Creek. Much enlarged.
13. Murex (Ocinebra) trochispira, *Tate*. Muddy Creek. Much enlarged.
14. Typhis tripterus, *Tate*. Adelaide.
15. Fusus hexagonalis, *Tate*. Muddy Creek. *b*, Apex enlarged.

PLATE IV.

1. Bela sculptilis, *Tate*. Muddy Creek. *b*, Ornament on shoulder enlarged.
2. Bela pulchra, *Tate*. Muddy Creek. *b*, Ornament on shoulder enlarged.
3. Bela Woodsii, *Tate (Cominella cancellata*, Woods). Table Cape.
4. Epidromus turritus, *Tate*. Muddy Creek.
5. Siphonalia spatiosa, *Tate*. Muddy Creek.
6. Epidromus citharellus, *Tate*. Muddy Creek.
7. Bela crassilirata, *Tate*. Muddy Creek.
8. Murex (Phyllonotus) Eyrei, *T. Woods*. Muddy Creek. *b*, Sculpture, and *c*, apex much enlarged.
9. Pisania semicostata, *Tate*. Muddy Creek.
10. Epidromus leptoskeles, *Tate*. Muddy Creek. Enlarged.
11. Phos cominelloides, *Tate*. Muddy Creek.
12. Cominella pumila, *Tate*. Adelaide. Enlarged.
13. Murex (Pteronotus) didymus, *Tate*. Schnapper Point.

PLATE V.

1. Triton armatus, *Tate*. Murray Desert.
2. Triton tumulosus, *Tate*. Muddy Creek.
3. Triton annectans, *Tate*. Muddy Creek.
4. Triton Woodsii, *Tate*. Muddy Creek. *b*. Apex enlarged.
5. Tritron cribrosus, *Tate*. Adelaide.
6. Triton Woodsii, var., *Tate*. River Murray Cliffs.
7. Triton tortirostris, *Tate*. Schnapper Point.
8. Triton radialis, *Tate*. River Murray Cliffs.
9. Triton gibbus, *Tate*. Schnapper Point.
10. Triton protensus, *Tate*. Muddy Creek.
11. Triton cyphus, *Tate*. Schnapper Point.
12. Triton textilis, *Tate*. Muddy Creek.

PLATE VI.

1. Peristernia interlineata, *Tate*. Muddy Creek. Slightly enlarged.
2. Trophon torquatus, *Tate*. Aldinga. *a*. The shell much enlarged; *b*. Apex magnified.
3. Murex (Chicoreus) irregularis, *Tate*. Muddy Creek. Slightly enlarged.

4. Vitularia curtansata, *Tate.* Muddy Creek. Enlarged.
5. Sipho asperulus, *Tate.* Muddy Creek. Enlarged.
6. Ranella (Argobuccinum) Prattii, *T. Woods.* Muddy Creek.
7. Triton oligostirus, *Tate.* Adelaide. Enlarged.
8. Triton gemmulatus, *Tate.* Muddy Creek. *a.* Enlarged; *b.* Magnified ornament.
9. Triton sexcostatus, *Tate.* Aldinga. Enlarged.
10. Epidromus texturatus, *Tate.* Schnapper Point. *b.* Ornament enlarged.
11. Epidromus nodulatus, *Tate.* Adelaide. Enlarged.
12. Epidromus tenuicostatus, *T. Woods.* Muddy Creek. Enlarged.

PLATE VII.

1. Fusus spiniferus, *Tate.* River Murray Cliffs.
2. Fusus dictyotis, *Tate.* Schnapper Point.
3. Fusus senticosus, *Tate.* Muddy Creek. Slightly enlarged.
4. Fusus craspedotus, *Tate.* Muddy Creek.
5. Fusus aciformis, *Tate.* Schnapper Point. *b.* Magnified ornament.
6. Fusus dictyotis, var., *Tate.* River Murray Cliffs.
7. Fusus acanthostephes, *Tate.* Schnapper Point.
8. Fusus bulbodes, *Tate.* Schnapper Point.
9. Pseudovaricia mirabilis, *Tate.* Muddy Creek. *b.* Apex enlarged.
10. Fusus foliaceus, *Tate.* Muddy Creek.

Plate VIII.

1. Fasciolaria decipiens, *Tate.* Muddy Creek.
2. Fasciolaria cryptoploca, *Tate.* Muddy Creek.
3. Fasciolaria rugata, *Tate.* Schnapper Point.
4. Fasciolaria cristata, *Tate.* Muddy Creek.
5. Siphonalia lamellifera, *Tate.* Schnapper Point.
6. Fasciolaria concinna, *Tate.* Schnapper Point.
7. Peristernia Morundiana, *Tate.* River Murray Cliffs.
8. Peristernia Aldingensis, *Tate.* *a*, Aldinga; *b*, variety, Adelaide.
9. Fusus cochleatus, *Tate.* Aldinga.
10. Cantharus varicosus, *Tate.* Aldinga.
11. Peristernia lintea, *Tate.* Muddy Creek.
12. Peristernia subundulosa, *Tate.* Muddy Creek.

Plate IX.

1. Fusus dumetosus, *Tate.* Muddy Creek. Enlarged.
2. Peristernia approximans, *Tate.* Muddy Creek. Enlarged.
3. Peristernia purpuroides, *Tate.* Muddy Creek. Enlarged.

4. Triton ovoideus, *Tate*. Muddy Creek. Enlarged.
5. Triton intercostalis, *Tate*. Muddy Creek.
6. Trophon anceps, *Tate*. Aldinga. Slightly enlarged.
7. Pisania obliquecostata, *Tate*. Muddy Creek. Much enlarged.
8. Pisania brevis, *Tate*. Muddy Creek. Enlarged.
9. Trophon brevicaudatus, *Tate*. Muddy Creek. Much enlarged.
10. Peristernia actinostephes, *Tate*. Adelaide. Much enlarged.
11. Cominella pertusa, *Tate*. Adelaide. Much enlarged.
12. Leucozonia micronema, *Tate*. Schnapper Point. Enlarged.
13. Leucozonia staminea, *Tate*. Schnapper Point. Enlarged.
14. Peristernia apicilirata, *Tate*. Adelaide. Much enlarged.

Plate X.

1. Peristernia altifrons, *Tate*. River Murray Cliffs.
2. Fusus simulans, *Tate*. River Murray Cliffs. *a*, Young shell enlarged; *b*, spire of older shell, natural size.
3. Fasciolaria exilis, *Tate*. River Murray Cliffs. Enlarged.
4. Cominella crassina, *Tate*. Muddy Creek.
5. Phos tuberculatus, *Tate*. Muddy Creek. Slightly enlarged.
6. Cominella subfilicea, *Tate*. Aldinga. Slightly enlarged.
7. Tudicula turbinata, *Tate*. River Murray Cliffs.
8. Tudicula costata, *Tate*. Murray Desert.
9. Tudicula angulata. *Tate*. Muddy Creek.
10. Pisania rostrata, *Tate*. Muddy Creek. Enlarged.
11. Trophon mangelioides, *Tate*. River Murray Cliffs. Much enlarged.
12. Phos tardicrescens, *Tate*. Muddy Creek. Enlarged.
13. Fusus sculptilis, *Tate*. Adelaide. Much enlarged.
14. Murex minutus, *Johnston*. Table Cape. Much enlarged.

Plate XI.

1. Cominella Clelandi, *Tate*. Aldinga.
2. Melanopsis Pomahaka, *Hutton*. Muddy Creek. Enlarged.
3. Phos (?) variciferus, *Tate*. Muddy Creek. Enlarged.
4. Triton crassicostatus, *Tate*. Table Cape. Enlarged.
5. Zemira præcursoria, *Tate*. Muddy Creek. Slightly enlarged.
6. Pisania purpuroides, *Johnston*. Table Cape. Enlarged.
7. Peristernia affinis, *Tate*. Table Cape. Slightly enlarged.
8. Siphonalia longirostris, *Tate*. Schnapper Point.
9. Murex (Phyllonotus) Legrandi, *T. Woods*. Table Cape. Slightly enlarged.

10. Peristernia transenna, *T. Woods*. Table Cape. Slightly enlarged.
11. Epidromus Tasmanicus, *Johnston*. Table Cape. *a*, Enlarged; *b*, magnified ornament.
12. Phos liræcostatus, *T. Woods*. Table Cape. Slightly enlarged.

Plate XII.

1. Dennantia Ino, *T. Woods*. Muddy Creek. *b*, Apex enlarged; *c*, Side view of outer lip, much enlarged.
2. Dennantia cingulata; var, *Tate*. Schnapper Point.
3. Dennantia Ino; var, *Tate*. Muddy Creek.
4. Fusus Johnstoni, *T. Woods*. Table Cape. *a*, Adult; *b*, Young shell (type spec.), slightly enlarged.
5. Dennantia cingulata, *Tate*. Schnapper Point. *b*, Enlarged ornament.
6. Nassa crassigranosa, *Tate*. Muddy Creek. *a*, Adult, enlarged; *b*, Senile example.
7. Ricinula subreticulata, *Tate*. Muddy Creek. Enlarged.
8. Purpura abjecta, *Tate*. Muddy Creek.
9. Nasa Tatei, *T. Woods*. Muddy Creek. Senile example, enlarged.
10. Voluta uncifera, *Tate*. River Murray Cliffs.
11. Voluta McDonaldi, *Tate*. Schnapper Point. (A very young shell, with one ordinary spire-whorl.)
12. Lyria harpularia, *Tate*. Muddy Creek.

Plate XIII.

1. Cominella Clelandi, *Tate*. Hallett Cove.
2. Leucozonia tumida, *Tate*. Muddy Creek. Much enlarged.
3. Voluta tabulata, *Tate*. Murray Desert.
4. Voluta ellipsoidea, *Tate*. Muddy Creek.
5. Fusus Tateanus, *T. Woods*. Table Cape.
6. Voluta pseudolirata, *Tate*. Muddy Creek.
7. Voluta pagodoides, *Tate*. Aldinga.
8. Voluta (Volutoconus) limbata, *Tate*. Schnapper Point. *b*, Sculpture, magnified.
9. Voluta (Volutoconus) conoidea, *Tate*. Muddy Creek.
10. Voluta cathedralis, *Tate*. Muddy Creek.

Errata.

Page 92. Under Typhis disjunctus, for fig. 14 read fig. 1.
Page 104. Under Murex Legrandi, for fig. 8 read fig. 9.
Page 121. Under Triton armatus for fig. 3 read fig. 1.

Further Notes on Australian Coleoptera, with Descriptions of New Species.

[Read October 4, 1887.]

By the Rev. T. Blackburn, B.A.

The following paper is partly supplementary to the series of papers that I have read before the Royal Society during the year, but I take the opportunity its publication affords to furnish descriptions of new species that have recently come under my notice.

I have lately had the advantage of receiving a communication from my friend, D. Sharp, Esq., M.D., of Shirley Warren, near Southampton, England, President of the Ent. Society of London, relative to a number of types that I forwarded to him some time ago, and also to some of the series of memoirs that I have read before the Royal Society. As Dr. Sharp's standing among students of entomology is so high that he is probably generally regarded as "*facile princeps*" of living coleopterists, I have received his notes and determinations with extreme interest, and am glad to have received them in time to correct in this present volume of our transactions two errors that they have brought to my notice in my previous papers—one the application to a new genus of a name that was already in use, the other the description by me as new of a species that M. Fauvel had already described in the Ann. Mus. Civ. Gen., 1877. In correcting the latter (see below) I have explained why I failed to identify my insect with M. Fauvel's.

CARABIDÆ.

(Sub-Fam. Scaritidæ.)

EPILECTUS *gen. nov.*

I offer this name as a substitute for *Eurygnathus* (vid. ant. p. 12) which, Dr. Sharp points out, is already in use for a genus of *Carabidæ*.

(Sub-Fam. Cratocerida).

PHORTICOSOMUS.

In characterising this genus, Dr. Schaum states that the abbreviated scutellar elytral stria is absent. This, however, does not appear to be strictly correct. In most examples of *P. felix*, Sch. (the type of the genus), I find traces of it, generally amounting to no more than an impression at the extreme base, but sometimes being more prolonged, and in several other

species of the genus it is almost well-defined in some specimens. In all the species of the genus known to me there is a distinct elytral impression on the third interstice, behind the middle, but I have seen occasionally examples in which it is hardly to be discerned; also, I find that under a strong lens the anterior tibiæ are crenulate on the lower part of their exterior margin. The under surface and femora are dotted very thinly with extremely long hairs.

P. mucronatus, sp. nov. Rufo-piceus, prothorace (marginibus lateralibus exceptis) et capite obscurioribus; illi angulis posticis acutis subdentiformibus; elytris apice submucronatis, minus fortiter striatis, interstitiis planis antice, postice subconvexis. Long., 6 l.

The thorax is widest a little in front of the middle, with its lateral margins rather strongly rounded and quite widely reflexed (considerably more so than in *P. felix*, Schaum), and has a feeble impression on either side at the base, with scarcely any puncturation; the anterior angles are strongly produced. The apex of the elytra is produced in a conspicuous manner.

A specimen has been sent to me by Mr. Rothe, of Sedan, and there is another (badly crushed and useless as a type) in the South Australian Museum, taken at Parallana by Mr. C. M. Bagot, from which, however, I have described the colours, as the specimen from Mr. Rothe appears to be immature, and is much paler.

P. brunneus, sp. nov. Rufo-brunneus vel piceus, antennis palpis pedibusque dilutioribus; prothorace canaliculato, antice bisinuato, postice angustato, angulis posticis obtusis; elytris fortiter striatis. Long. $4\frac{3}{4}$—5 l.

Brown, inclining to reddish, or to pitchy; legs palpi and antennæ uniformly paler. Head, across the eyes, a little wider than the base of the thorax. Thorax transverse, widest in front of the middle, scarcely half again as wide as long, faintly channelled (the channel reaching neither the base nor apex); the anterior margin bisinuate, considerably wider (*i.e.*, as 4 to $3\frac{1}{4}$) than the base; sides rather strongly rounded, scarcely sinuate just before the base, with a narrow reflexed margin; base very gently emarginate; anterior angles not prominent; posterior angles very obtuse, but not quite rounded off; the region of the posterior angles explanate, with the margin considerably turned up; across the thorax, just in front of the base, is a transverse depression, which is separated from the extreme base (except close to the posterior angles) by a narrow portion which is not depressed and into which the central longitudinal channel does not penetrate; in the transverse depression there are some obscure wrinkles, and the explanate

region of the posterior angles is occupied by some rather close ill-defined puncturation; there is an obscure curved impression across the middle of the front part of the thorax which forms the anterior limit of the longitudinal channel. The elytra are regularly and rather strongly striated, with the abbreviated stria represented (in the specimens before me) only by a fovea at the extreme base; the interstices are wide, almost quite flat near the front, but become narrower, and convex, behind, the third interstice bearing a well marked puncture behind the middle.

This insect is extremely close to *P. felix*, Schaum, which is described very briefly and unsatisfactorily by its author. The figure supplementing the description, however, has enabled me to identify as that species an example sent to me from Melbourne, and there is another much damaged specimen in the South Australian Museum. *P. brunneus* differs from *felix* in being a little narrower, with the antennæ uniformly testaceous red, instead of pitchy with the base paler; its thorax is not quite so strongly transverse, and is much more narrowed behind, with the edges of the explanate part near the posterior angles more turned up. In *felix*, moreover, the declivous hind portion of the thorax continues evenly to the extreme base and is much more strongly and closely wrinkled.

Lyndoch Valley. Taken by Mr. Tepper.

P. similis, sp. nov. Brunneus, antennis palpis pedibusque pallidioribus; prothorace vix canaliculato, antice vix bisinuato, cordato, angulis anticis haud productis, posticis acute rectis; elytris minus fortiter striatis, interstitiis planis. Long. 5 l.

Head, across the eyes, slightly narrower than the base of the thorax. Thorax transverse, widest in front of the middle, about half again as wide as long, very feebly channelled; anterior margin scarcely wider than base; a transverse curved depression well marked in the front; sides strongly rounded in front, becoming straight just before the base; margins narrow and but little explanate behind; surface almost absolutely devoid of puncturation. Elytra rather feebly striated, the interstices almost perfectly flat even to the apex.

This insect resembles *P. mucronatus*, but besides the elytra being normal at the apex, the thorax is a little narrower behind, with the anterior angles not prominent, the sides much more narrowly margined and the posterior angles slightly less sharp.

There is a single specimen in the South Australian Museum. It was taken, almost certainly, in South Australia, but I cannot ascertain exactly in what locality.

The classification of the Australian insects of these groups is in a state of great confusion; nor am I able to do very much towards clearing up the difficulty. The great obstacle consists in the unsatisfactory nature of most of the descriptions that have been published, which renders the identification of the insects they refer to very doubtful. As I have before me some species of the group that are certainly as yet undescribed, and which I now purpose describing, it will not be out of place to preface my descriptions with a few notes on the genera of these sub-families. Taking Mr. Masters' recent catalogue of Australian *Coleoptera* in hand, we find the general confusion very clearly reflected there. Under the heading "*Harpalides*" that catalogue includes all the genera mentioned in it which belong to M. Lacordaire's two tribes *Anisodactylides* and *Harpalides*. But it is headed by the genus *Phorticosomus* which Dr. Schaum (its author) states (evidently correctly) to belong to the *Cratocerides*—a sub-family that finds a place elsewhere in Mr. Masters' catalogue. The next genus *Geobænus* is represented by a single species described in the "Voyage de la Coquille," the identification of which is probably hopeless, and which is not at all likely to be a real *Geobænus*. Then follows *Gnathaphanus*, to which eleven species are attributed. *Gnathaphanus* was founded by Mr. W. S. Macleay on the female of a species from Java, and Lacordaire and Erichson have both regarded it as probably a mere synonym of *Harpalus*. However this may be, unless there is evidence in the matter unknown to me, I should think it very improbable that the Australian species are entitled to bear the name. The first species in the genus (*Adelaidæ*, Cast.), and several others at least, are moreover evidently congeneric with the species that appears some pages further on under the name of *Microsaurus* (a name that has fared badly, for its author, Mr. Bates, in the Journal of Entomology, gives it as *Mirosarus*, and in the same volume it is indexed as *Microsarus*). *Anisodactylus* follows *Gnathaphanus* with three species, one of which was attributed to the genus by the Baron de Chaudoir. This is no doubt very high authority so far as concerns the species described by the Baron*; as regards the other two (*Harpalus rotundicollis* and *Waterhousei*, Cast.), although the tarsal structure and some other characters are extremely suggestive of *Anisodactylus*, the shape of the thorax, the great slenderness of the antennæ and palpi, and other features produce a facies utterly unlike that of the European *Anisodactyli*, and suggest the need of a new generic name. Without having seen the Baron de Chaudoir's

* I have not seen the description.

remarks on the subject, however, I should not do wisely to take action in the matter. Then follows *Haplaner*, founded by the Baron de Chaudoir for a single species (described by the Count de Castelnau as a *Harpalus*), and this is no doubt a good genus. Then comes *Diaphoromerus*, formed by the Baron de Chaudoir for an Australian insect—no doubt a perfectly satisfactory genus, but no representative of it has come under my notice, and (as I have examined a large number of *Anisodactylides* from various parts of the colony) I cannot but conclude from this that some, if not many, of the crowd of species Mr. Masters attributes to it are not really at home there. The five *genera* that follow are doubtless quite satisfactory, but they do not average three species apiece. Of the remaining four genera (1)I should say that some at least of those called *Harpalus* are very questionable; (2) *Cyclothorax* belongs to the *Anchomenidæ*; (3) concerning *Stenolophus* and *Acupalpus*, as I have not seen any of the few species so named, nor do the authors of those species attribute to them any of the essential characters of those genera, I will only say that if the insects are correctly placed, it is very interesting on account of the general divergence of the Australian *Harpaloid* series from the types that prevail in the Northern Hemisphere. I will just guard myself, in conclusion, from being understood to depreciate Mr. Masters' work by saying that he has no doubt followed the only course open to him in distributing the species he enumerates among known genera rather than going beyond the province of a catalogue by forming new genera. His catalogue will doubtless long remain the standard one on which students will work, and is very valuable. So many of the types on which the Australian species were founded are in Europe (if existent at all), that no small boon would be conferred on Australian workers if some European specialist would make a careful examination of such as are available, and report the result to one of our scientific Societies for publication.

NOTE TO MY REMARKS ON ANISODACTYLIDÆ AND HARPALIDÆ.

While these notes were in the press, and too late for me to alter them, I received through the kindness of Dr. Gestro, of Genoa, a copy of the Baron de Chaudoir's memoir alluded to above as not having been seen by me. I find that in the main, though not strictly, Mr. Masters has followed the Baron in his arrangement of the families in question. On the whole the perusal of the memoir has not led me to modify to any considerable extent the remarks that I have made. I cannot but consider still that *Diaphoromerus* as the Baron has arranged it is an assemblage of forms that ought not to be united in a single

genus. The Baron regards as mere sections groups of species which have the male anterior and intermediate tarsi widely dilated (the basal four joints being similarly clothed beneath), and groups in which the same are very slightly dilated (with the first joint clothed differently from the rest). The memoir has enabled me to identify with certainty some of the species in the former section concerning which I was not previously sufficiently assured to found any conclusion on their characters, and when I place side by side *Harpalus Germari*, Cast., and *Harpalus Deyrollei*, Cast., their differences appear far too great to allow of their bearing a common generic name, while the close affinity between the latter and *Hypharpax* is beyond doubt. The Baron does not appear to have noticed the striking difference between the hind tarsi of *Diaphoromerus* (first group) and those of *Hypharpax*, and seems to have regarded the tooth on the hind femora of the latter as a constant character, the absence of which should *ipso facto* exclude from the genus. I am quite convinced that *Harpalus inornatus*, Germ., is a typical *Hypharpax*, although the Baron places it as a synonym of *Harpalus australis*, Dej. (without giving any reason), under the generic name *Diaphoromerus*. As I have said above, I think it *possible* that the two may be identical, but in that case *H. australis* is a *Hypharpax*. My remarks on *Anisodactylus* are quite in agreement with those of the Baron. Touching *Gnathaphanus*, he appears to have deliberately considered the Australian species called by that name generically inseparable from the Javanese individual for which the name was provided, so that the doubt I have expressed above on the point is probably unfounded. In that case Mr. Bates' genus *Mirosarus* will not stand, I think, as it appears to have been founded for a species that de Chaudoir would have considered to be a *Gnathaphanus*.

HYPHARPAX.

This genus is, I think (among the *Anisodactylides*, having the anterior and intermediate tarsi in the male strongly dilated with the basal joint not very much smaller than the second) best distinguished by the shortness of the tarsi, especially the hindmost. These—*i.e.*, the hind tarsi—are very decidedly shorter than their tibiæ, and have their basal joint in some species scarcely, in others not at all, longer than the second. The characters in the hind femora and tibiæ of the males are very variable. In *H. lateralis*, W. S. Macleay (the type of the genus), the femur is said to be unidentate beneath, and the tibia to be arched and crenulate within. In Mr. Bates' *H. puncticauda* the femur is said to be "incrassate but not dentate," and the tibia to be flexuous but not arched. I have before me a number of species (several of which are probably identical with some

already described) in one of which I can discover no difference in structure between the hind legs of the male and female, and in another (certainly *H. inornatus*, Germ., I think) the hind femur is more strongly dentate in some males than in others. All the species of this genus that I have seen are short, broad insects, with the thorax strongly, or very strongly, transverse, and its basal and apical margins not differing much from each other in width. The following species attributed to *Diaphoromerus* in Mr. Masters' catalogue belong, I think to *Hypharpax*, viz., *æreus*, Dej., **australis*, Dej.,* *inornatus*, Germ., **Coxi*, Cast, *Bostocki*, Cast, *femoralis*, Cast, *mandibularis*, Cast, and perhaps *mœstus*, Dej., and *ranula*, Cast. The following, which Mr. Masters places in *Harpalus*, also seem from the descriptions to belong to *Hypharpax*, viz., *atroviridis*, Macleay, and *convexiusculus*, Macl.

H. inornatus, Germ. A species occurring commonly at Port Lincoln and also around Adelaide, agrees so well with Germar's description that I have no hesitation in considering it identified. The following particulars are omitted by Germar, and should be placed on record, viz., the male characters are exactly as in typical *Hypharpax* (the tooth on the posterior femora, however, being more strongly developed in some specimens than in others) the width of the thorax is nearly half again the length of the same, and its hind angles are slightly obtuse, but rounded off, the hinder part of the lateral margin forming a slightly obtuse angle with the base, but the angle itself being rounded; the puncture on the third interstice of the elytra is nearer to the apex than in some other species of the genus. The description of *Harpalus australis*, Dej., does not altogether agree with that of *H. inornatus* (*e.g.*, the thorax being called "subtransversus"), but, nevertheless, it is quite possible they may refer to the same species, in which case Dejean's name must have the preference, as in Mr. Masters' catalogue. I should think it also open to much doubt whether *Harpalus Peroni*, Cast, is not really identical with *inornatus*. I do not, however, see sufficient reason for Mr. Masters' identification of *H. Peroni* with *H. novæ-Hollandiæ*, Cast, as their author gives a perfectly satisfactory differential character between them in the shape of the thorax. I possess a *Hypharpax* from Melbourne which I have little doubt is the latter species. It is extremely close to *inornatus*, Germ., but has the thorax much narrower in front, and is a little smaller.

* Mr. Masters treats these three as identical, but I am not clear on the point. Germar's insect may be identical with Dejean's, but Count de Castelnau's description is too vague for identification, and it is very unlikely to be founded on the same insect as Germar's, and if so the description of the colour of the legs must have been founded on a very unusual variety.

H. Boisduvali, Cast. I possess a female specimen from Swan River, evidently a *Hypharpax*, which is probably this insect. It differs from the preceding exactly, as *H. Boisduvali* is said to differ from *australis*, Dej., its thorax being nearly twice as wide as long, with strongly rounded sides, and the elytra wide, (especially behind), with slightly feebler striation. I cannot understand Mr. Masters' reference of *H. Boisduvali* to *æreus*, Dej , as the thorax of the latter is said to be rectangular behind. I should say that *H. Boisduvali*, Cast, is a good species.

THENAROTES.

T. australis, sp. nov. Piceus ; nitidus ; palpis, antennarum basi, prothorace, elytrorum marginibus lateralibus apiceque, et pedibus, rufis testaceisve ; antennis elongatis (corporis dimidio sublongioribus) ; prothorace transverso postice angustato ; elytris striatis, striis latera versus deficientibus ; subtus piceus in medio rufescens. Var., pronoto prosternoque in medio infuscatis. Long. $1\frac{4}{5}$—2 l.

The whole upper surface is absolutely devoid of puncturation, properly so-called, except a single small puncture on the third interstice of each elytron behind the middle ; there are also a few obscure coarse impressions in a very strong furrow which runs a little within the lateral margin of the elytra, commencing about the middle and reaching the apex. The antennæ (by measurement) slightly exceed half the length of the body, but appear even longer to the eye, and are of a fuscous colour (except the basal two joints). The thorax is about one-third wider than long, is widest just behind the front, and thence arcuately narrowed to the base, has basal angles almost rounded off and a fairly strong rounded impression on either side in front of the hind margin, is extremely finely margined at the sides, and pretty distinctly channelled longitudinally. Each elytron bears four well-marked striæ, outside which there is no distinct sculpture, except the lateral furrow mentioned above. The eyes are large and prominent. As the specimens before me all appear to be females, I can give no particulars concerning the tarsi of the male, but as I have Dr. Sharp's authority for attributing the insect to *Thenarotes*, I suppose they are as in *T. tasmanicus*, Bates. The under surface is minutely coriaceous.

I have met with this insect near Port Lincoln and in the Adelaide district, and have seen specimens taken by Mr. Rothe near Sedan.

T. discoidalis, sp. nov. Nitidus ; rufus vel piceo-rufus, capite (labro mandibulisque exceptis) et elytrorum disco piceis vel nigris ; antennis elongatis (corporis dimidio longitudine æqualibus) ; prothorace transverso, postice angustato, basi

utrinque foveolato punctulato, elytris striatis. Var.? Minor; elytris totis (sutura margineque laterali postice exceptis) piceis. Long. $1\frac{4}{5}$—2 l.

This species is rather closely allied to the preceding. The thorax is slightly less transverse (its width being scarcely one-third greater than its length), with some puncturation about the posterior angles which are obtuse, but well defined; the elytra are more strongly striated, and the striæ do not become obsolete laterally; the puncture on the third interstice is wanting; the colour is different also, the dark portion of each elytron being bordered all round (except along a portion of the base in some specimens) with a red colour similar to that of the thorax. In the male the tarsal structure is as Mr. Bates describes it in *Thenarotes*. There is no abbreviated scutellar stria in any of the specimens that have come under my notice, but I do not attach great importance to this character, since I find traces of a stria in some specimens, and not in others, of the preceding species. I also observe that the antennæ are exceptionally short in some specimens both of this and of the preceding; probably it indicates a sexual distinction.

Near Adelaide; also Sedan (Rothe).

T. metallicus, sp. nov. Minus nitidus; æneo-niger, antennis palpis pedibusque pallidis; antennis corporis dimidio longitudine æqualibus; prothorace transverso, postice angustato, angulis posticis obtusis; elytrorum disco obsolete striato. Long. $1\frac{2}{5}$—$1\frac{3}{5}$ l.

This species does not appear to differ from *Thenarotes* except in the very slight dilatation of the anterior and intermediate tarsi in the male. The thorax is strongly transverse (not much less than twice as wide as long), widest in front of the middle, with the sides rounded, the posterior angles obtuse, and an ill-defined fovea on either side behind. The elytra are elongate and parallel, with about three traceable striæ, outside which there are no distinct striæ, but there is a rather strong furrow representing the apical portion of about the seventh stria. The whole surface of the insect is finely coriaceous. It has much the facies of *Metabletus*.

I have two specimens taken in the Adelaide district.

NOTOPHILUS, *gen. nov.*

(Sub-Fam. Anisodactylinæ.)

Gen. *Thenaroti* affinis, at tarsorum 4 anteriorum plantis 1-4 squamipilosis; corpus convexius minus elongatum.

The species for which I have founded this genus do not appear to differ from *Thenarotes* structurally otherwise than in

the characters of the dilated tarsi in the male. Their facies is, however, different, owing to their shorter and more convex form.

N. niger, sp. nov. Minus nitidus; niger antennis pedibusque picescentibus; prothorace transverso, margine antico postico latitudine æquali; elytris (striâ suturali exceptâ) haud striatis. Long. $1\frac{1}{2}$—$1\frac{2}{3}$ l.

The antennæ are slender and reach back considerably beyond the base of the thorax; the frontal impressions of the head are very slight; the thorax is rather more than half again as wide as long, has no dorsal channel and is impunctate and in front nearly truncate. The sides are considerably arched, the reflexed margin very fine and the hind angles rounded off, near which there is a large impression on either side. The scutellum is large but scarcely penetrates between the elytra. These latter are nearly three times as long as the thorax, not very convex, and are arched on the sides; excepting some marginal impressions near the apex, a faint costa just within them, a puncture on either side behind, about where the third interstice would be if it existed, and a sutural stria, there is no trace of punctures or striæ; the surface, however, is not very shining. The anterior and intermediate tarsi in the male are moderately dilated, the basal three joints being about equal in width; the second is distinctly longest and is quite twice the length of the fourth; the first and third are about equal to each other and are not much shorter than the second; none of them is transverse unless the fourth, which is scarcely so. The hind tarsi are not much shorter than their tibiæ; their first joint is a little shorter than the second and third together, the fourth short, the fifth nearly equal to the first. In general appearance this species reminds one of *Blechrus*, though of course the thorax is wider.

Port Lincoln.

N. gracilis, sp. nov. Sat nitidus; niger; antennis pedibusque piccescentibus; prothorace transverso, antice quam postice vix latiori; elytris obsolete striatis, striis latera versus deficientibus. Long. $1\frac{1}{5}$—$1\frac{2}{5}$ l.

Very closely resembles the preceding, but is smaller, a little narrower, and more shining. There is a single well defined puncture on the centre of the surface of the head. The thorax is scarcely so transverse as in *N. niger*, is slightly more narrowed behind, and has a depression all across the base, in which the posterior impressions are included. The elytra are striated, the sutural stria being well defined and two or three striæ besides being traceable which, however, become gradually feebler as they recede from the suture and then cease alto-

gether. In other respects there is little distinction to be noted between the two insects.

Port Lincoln; also the Adelaide district.

N. parvus, sp. nov. Sat nitidus; niger; antennis pedibusque piescentibus vel rufescentibus; prothorace transverso postice angustato; elytris (striâ suturali exceptâ) vix evidenter striatis. Long. 1—1$\frac{1}{5}$ l.

This very small species is closely allied to both of the preceding two. In shape it resembes *gracilis*. There are several isolated punctures in front of the centre of the surface of the head. The thorax is still less transverse than that of *gracilis*, and is more narrowed backwards; it is depressed all across the base, and is very little wider than the head. The striation of the elytra is scarcely visible outside the sutural stria. In other respects there is little difference from *N. gracilis*.

Widely distributed in South Australia.

N. lætus, sp. nov. Nitidus; supra rufus vel testaceus, capite piceo, elytris plus minus venigronotatis; subtus piceus, sternis rufescentibus, antennis palpis pedibusque testaceis, antennis corporis dimidio longitudine vix æqualibus, prothorace transverso, postice angustato utrinque foveolato; elytrorum disco obsolete striato. Long. 1$\frac{2}{5}$—1$\frac{3}{5}$ l.

This diminutive species differs from *Thenarotes* in having the basal joint, as well as the second, third, and fourth, of the anterior tarsi in the male clothed with squamose pilosity, and narrowed at the base. I cannot discover any other structural peculiarity, unless it be that the same joint is not quite so much narrower than the second, as in *Thenarotes*. The thorax is rather strongly transverse (quite half again as wide as long), and is nearly truncate both in front and behind, with a faintly marked dorsal channel; the sides are rather strongly rounded in front (the greatest width being before the middle), and then converge to the base, which is a little narrower than the front margin; the hind angles are well marked and obtuse; strictly speaking the basal region is hardly foveolate, but the hind corners of the thorax are explanate; its surface is quite free from puncturation. The elytra have no sculpture on the disc except a well-marked sutural stria and faint traces of one, two, or three striæ beyond it. The blackish markings of the elytra in a brightly coloured specimen consist of a basal triangle with its apex directed backwards on the suture, and a large patch covering the whole of the apical two-thirds of the elytra except a spot on the suture behind the middle. In a pale specimen the basal triangle is reduced in size, and there is a transverse fascia just behind the middle, these markings being fuscous

rather than black, and shading off into the surface colour. The general appearance is very suggestive of *Sarothrocrepis*.

Near Adelaide, also Sedan (Rothe).

N. palustris, sp. nov. Nitidus; brunneo-ferrugineus, elytris abdomineque obscure infuscatis; antennis corporis dimidio brevioribus; prothorace transverso, trans basin depresso, postice vix angustato, utrinque foveolato; elytrorum disco vix striato. Long. $1\frac{1}{5}$ l.

This little insect does not seem to differ structurally from the preceding except in having the basal joint of the male front tarsi as wide as the second. The thorax is widest about the middle, and regularly rounded on the sides, with the basal angles rounded off. There is a depression all across the base, in which is a deep fovea on either side, and there is scarcely any trace of a longitudinal channel, and none at all of any puncturation. The elytra have a fine sutural stria, and scarcely any indication of striæ outside it, but there is a deep furrow near the apex of the external margin, as though the sutural stria was strongly recurved. The colour is a somewhat livid brown, with the legs paler, and there is some very obscure infuscation (which is probably variable) about the basal and apical regions of the elytra.

A single specimen occurred to me on the banks of the Murray, at Murray Bridge.

LECANOMERUS.

L. flavocinctus, sp. nov. Nitidus; piceo-niger (nonnullis exemplis capite prothoraceque rufescentibus), mandibulis palpis antennis pedibusque flavis, prothoracis elytrorumque margine summo flavo; prothorace leviter transverso; elytris striatis interstitiis planis. Long. 3 l.

This neat little insect seems to be quite distinct from anything previously described. The anterior margin of the thorax is slightly narrower than the base, the sides are pretty strongly rounded, the greatest width being considerably in front of the middle where it is about one-fourth part greater than the length; the anterior margin is scarcely concave, the hinder angles are roundly obtuse; there is a well defined central channel, and a large shallow impression on either side behind; the thorax has no distinct puncturation. The elytra are rather finely striated, the interstices quite flat except close to the apex where they become convex, the third interstice having no systematic puncturation; the abbreviated scutellar stria is wanting or indicated only by a basal dilatation of the second stria. The anterior and intermediate tarsi are very strongly dilated in the male, the basal joint being quite small

and the second scarcely smaller than the following two together, the fourth strongly emarginate and about the same size as the first. The hind tarsi are slender and not much shorter than their tibiæ, the first joint not much longer than the second, the third and fourth together equal to the first, the fifth quite equal to the first. The claws are very long and slender.

The facies is that of *Calathus*. Is it possible that *Geobænus Australasiæ*, Guer., is really a member of this genus? This question seems to be suggested by M. Lacordaire's remark (Gen. Col. I., p. 273) on the *Calathus*-like appearance of the African genus *Geobænus*.

Port Lincoln; not rare.

L. obscurus, Nitidus; niger; mandibulis, palporum apice, antennisque (basi testaceâ exceptâ) fuscis; pedibus (tibiis apice, tarsisque plus minusve infuscatis exceptis) sordide testaceis; prothoracis lateribus flavis; hoc fortius transverso; elytris subtiliter striatis, interstitiis planis. Long. $2\frac{2}{5}$ l.

The thorax resembles that of the preceding, except that it is more than a third wider than long, with its anterior margin scarcely narrower than its base, and has some confused puncturation about the basal impressions. The sides of the elytra are more parallel, the striæ fainter, the interstices, if possible, flatter in front, and certainly more convex behind; there is a distinct abbreviated scutellar stria and a well-defined puncture on the inner edge of the third interstice. The anterior four tarsi are not so strongly dilated in the male as they are in the preceding species, though their proportions are similar, except that the second joint is not quite so much larger than the rest. The hind tarsi resemble those of the preceding.

Near Adelaide.

L. Lindi, sp. nov. Nitidus; niger; antennis palpis pedibusque sordide testaceis; prothorace vix transverso; elytris striatis, interstitiis vix planis. Long. $2\frac{4}{5}$ l.

Very closely allied to *L. flavocinctus*, but differing in the following respects:—The legs, palpi, and antennæ are of a very dull testaceous color, and the extreme margin of the thorax and elytra is not paler than the rest of their surface; the thorax is evidently narrower, is scarcely a sixth part wider than long, and is widest scarcely in front of the middle; the interstices of the stria on the elytra are not quite so flat. In other respects the description of *L. flavocinctus* would apply to this insect.

P. Lincoln.

Harpalus Deyrollei, Cast. I have identified this species with some certainty, having taken it at Port Lincoln and on Yorke's Peninsula. I am, however, much puzzled as to its affinities. Five specimens are before me regarding the sex of which I am uncertain. In two of them there seems to be a slight dilation of the four basal joints on the anterior and intermediate tarsi, but it is very slight. If I am right in regarding these specimens as males the insect probably belongs to the true *Harpalides*. If, however, they are females the species may be a *Hypharpax*, although it is narrower and more elongate than any other of that genus that has come under my notice. I should be very glad of any precise information regarding the sexes of this insect. It appears to me not unlikely that *H. Fortnumi*, Cast., is founded on this same species, in spite of the Count calling it "rather short and broad," for the expression would not be inapplicable if it be compared with true *Harpali*. The descriptions of *Fortnumi* and *Deyrollei* are vague in the last degree, not even placing their sub-family beyond doubt, but they do not mention any satisfactory distinction of one from the other except the presence of some sculpture on the surface of the thorax in *Fortnumi* which is not attributed to *Deyrollei*. The specimens before me, however, vary in this respect, some having a few *striolæ*, others none.

STAPHYLINIDÆ.

LEPTACINUS.

L. picticornis, mihi (vide ant. p. 7). Dr. Sharp, of Southampton, tells me that specimens of this insect which I forwarded to him are identical with *Xantholinus socius*, Fauv. I have no doubt as to the correctness of this identification on Dr. Sharp's authority, and will ask all correspondents to whom I have supplied the name to substitute *socius*, Fauv., for *picticornis*, Blackb. But I do not think that the species can be regarded as rightly placed in *Xantholinus*. Its dilated anterior tarsi alone prevented my looking for it among species attributed to that genus. Its intermediate coxæ, too, are scarcely more widely separated than those parts are in many species of *Leptacinus*, and the apical joint of the maxillary palpi agrees much better with *Leptacinus* than with *Xantholinus*. I think the insect should be called *Leptacinus socius*, Fauv. It should be noted also that M. Fauvel in his description makes no reference to the peculiar colouring of the antennæ (which suggested my name), and which is strongly marked in almost every one of the multitude of examples that I have examined—the first and third joints being black or pitchy, while all the rest are ferruginous.

PHLŒOCHARIS.

P. antipodum, Fauv. I have met with this species, I think, several times in the Port Lincoln district. If I am right in my identification of it, however, M. Fauvel has founded his description on immature or very pale specimens. I have now before me two examples from Port Lincoln that I cannot consider specifically distinct, one of which is coloured as *P. antipodum* is described, while the other is very much darker, being of a pitchy colour, with the front of the head, the thorax, the apex of the elytra and of the hind body, and the base of the antennæ reddish. It is just possible that if my specimens were placed side by side with M. Fauvel's types they might prove to be a distinct species, but, judging by the description, I think they are identical.

HOMALIUM.

H. Adelaidæ, sp. nov. Piceus; mandibulis, labro, palpis, antennis, pedibusque rufescentibus; antennis brevibus, crassiusculis; capite medio sparsim, ad latera crebrius, subtilius punctulato; prothorace postice leviter angustato, sparsius subtiliter punctulato; elytris prothorace duplo longioribus, crebrius subtiliter sublineatim punctulatis; abdomine obscure subtiliter punctulato. Long. $1\frac{1}{2}$ l.

There is a slightly reddish tone about the thorax, shoulders, and sides of the hind-body in this insect. The antennæ are very little longer than the head; their joints 3-10 all transverse (4-10 strongly so), the apical joint very little longer than wide. The thorax has strongly rounded sides, and is widest just behind the front, thence slightly contracted to the base, in front of which the sides are sinuate so that the hind angles are very nearly right-angles; there is scarcely any indication of longitudinal foveæ. The elytra are parallel-sided, and scarcely wider than the thorax. The puncturation of the hind body becomes more sparing and obscure from the base to the apex.

Extremely like the European *H. concinnum*, Er., from which it differs in its much shorter and stouter antennæ, and in the somewhat more distinct puncturation of the hind body.

I obtained a single specimen from *débris* on the banks of the Torrens.

H. philorinoides, Fauv. I have taken under bark of *Eucalyptus*, both near Port Lincoln, and in the Adelaide district specimens which agree quite satisfactorily with the description of this insect, previously recorded only from Victoria.

COLYDIIDÆ.

DITOMA.

D. pulchra, sp. nov. Minus depressa; rufa; elytrorum disco infuscato; prothoracis lateribus valde explanatis fortiter

serrulatis, elytris tuberculis parum elevatis subseriatim dispositis. Long. 2 l. Lat $\frac{3}{4}$ l. (vix.)

Antennæ red, club not darker; third joint considerably narrower, but not shorter, than second, longer than broad; 4-9 small and subequal; the last two forming a large abrupt club. Head very strongly dilated in front of the eyes, the dilated portion forming on either side a large obliquely elevated lobe which completely covers the basal joint of the antennæ; the space between these lobes is occupied by the clypeus, and the outline of the entire surface thus formed in front of the eyes consists of about a dozen straight lines (of very unequal lengths) placed at angles to each other. The surface of the thorax is uneven, the disc being occupied by two costæ wich run in a zigzag manner from the front margin to the base (the space between them being depressed), outside which are some other less-defined costæ running both longitudinally and transversely, with depressed interspaces. The sides of the thorax are widely explanate, the greatest width (which is towards the front) of either explanate margin being about one-third the width of the whole space between the explanate margins. The general form of the explanate margins is comparatively narrow at the base gradually dilating all the way to the level of the anterior margin and then running on forwards in a projecting lobe which attains the level of the front of the eye, this projecting lobe narrowing to its apex, which is quite acuminate. The exterior edge of the explanate margin is serrate, the incisions becoming deeper, wider, and more parallel sided from the front backwards till in the hinder half they reach half way through the explanate margin and are only about four in number; the deepest and widest incision of all, however, is at the *middle* of the margin. The surface of the head and thorax appear to be coarsely but very obscurely granulate. The margins of the elytra are not explanate but are conspicuously serrulate along their whole length. The middle of the disc of each elytron is nearly black, and the whole surface is striated, also is occupied by a system of coarse transversely confluent puncturation which seems to have no relation to the striation, and also bears three rows of large but slightly elevated, rounded, pale tubercles, the rows (counting from the suture) containing six, five, and two tubercles respectively, the inner two rows extending the whole length of the elytra, the external one being behind the middle and the tubercles in all the rows becoming more defined towards the apex. The whole surface is thinly clothed with short erect scale-like setæ, which tend to gather into pencils on the tubercles. The apex of each elytron is separately acuminate and a little produced.

This extraordinary insect must be very closely allied to the

New Zealand *Ditoma sellata*, Shp., described in the Transactions of the Royal Dublin Society (1886).

I met with a single specimen under the bark of a *Eucalyptus* on Mount Lofty in December, 1885.

D. obscura, sp. nov. Minus depressa; piceo-nigra antennis palpis pedibusque plus minusve rufis; prothoracis lateribus valde explanatis minus fortiter serrulatis, elytris crasse punctulatis striatis; interstitiis subplanis. Long., $1\frac{2}{3}$ l.; lat., $\frac{3}{5}$ l.

The structure of the antennæ head and thorax is almost as in *D. pulchra*, except that it is less strongly defined, the sides of the head being less dilated, the explanate margins of the thorax not quite so wide, and the serration of the same feebler. The elytra also are sculptured very similarly except that they are devoid of tubercles and of pencils of hairs, although otherwise the insect is similarly squamoso-setose.

I have two specimens of this species, taken near Roseworthy, South Australia.

D. perforata, sp. nov. Sat depressa; elongata; supra piceo-nigra, subtus rufo-picea; capite antice antennis palpis pedibusque plus minusve rufis; prothoracis lateribus sat fortiter serrulatis vix explanatis antice haud productis; elytris ad latera vix serrulatis, striatis, striis crasse rugulose puntulatis. Long., $1\frac{1}{5}$ l.; lat., $\frac{2}{5}$ l.

In this species the head is scarcely dilated in front of the eyes, its sides running forward nearly in an even line, and the front being widely and gently convex. The thorax is subtruncate in front, with the anterior margin, however, widely and roundly (though gently) produced in the middle; the base is very little narrower than the front; the length about equals the width; the sides are not distinctly explanate, but are cut into about ten very distinct teeth placed rather evenly along their margin, except that the front two or three are smaller than the rest; the surface is even, and covered with coarse but not deep puncturation, the punctures being much confluent and the space between them tending to run into wavy lines. The elytra are gently striate, each stria bearing a row of extremely coarse but not deep punctures, which almost meet across the interstices. The surface is sparingly clothed with fine short erect setæ.

I have seen about a dozen specimens of this insect, all taken in the Adelaide district.

D. parva, sp. nov. Sat depressa; elongata; piceo-nigra; capite antice, antennis, palpis, pedibus, humerisque obscure rufis; prothoracis lateribus vix explanatis, subtilius serrulatis, antice sat fortiter productis; elytris for-

titer costatis, lateribus antice serrulatis. Long., $1\frac{1}{4}$ l.; lat., $\frac{1}{3}$ l.

The head does not differ much from that of *D. perforata*. The thorax is a little wider than long, very little narrowed hindwards, the middle part of its anterior margin being roundly and gently produced; the sides are distinctly and rather finely serrate, and not distinctly explanate except at the extreme front, where they become so in the form of a kind of small lobe, which projects obliquely forward and outward; the surface is obscurely areolate, being intersected by some obscure ridges, between which the spaces are a little hollowed out. Between the suture and lateral margin, each elytron bears four strong costæ, of which the first and fourth meet close to the apex, and the second and third meet a little in front of the apex. There are two rows of punctures in each of the spaces between the costæ.

I possess a single specimen of this minute insect; it was taken at Woodville.

D. hilaris, sp. nov. Sat depressa; elongata; picea vel piceo-nigra; capite antice, prothoracis lateribus, elytrorum maculis nonnullis, antennis, palpis, pedibusque, rufis; prothoracis lateribus explanatis haud serrulatis antice productis; elytris costatis, interstitiis biseriatim punctulatis.

Head as in the preceding two species. Thorax rugosely but very closely and rather finely punctured, disc depressed, the depressed space being margined on either side by a very obscure elevated ridge. These ridges commence near each other on the anterior margin, run back a very short distance parallel to each other, then turn outward and describe a semicircle returning to their original distance apart at a point about two-thirds the length of the thorax from the anterior margin, and thence run parallel to the base, so that the depressed discal space is parallel-sided near the anterior margin, and near the base and is almost circular in the middle. Between these discal costæ and the lateral margins there is on either side another costa nearly parallel to the margin. The sides of the thorax are narrowly explanate and nearly straight; the front margin is in the middle, rather strongly elevated and arcuately produced and the explanate margins are produced forward, so that the front outline of the thorax is strongly bisinuate. The thorax is quite strongly transverse and scarcely wider in front than behind. There are four fine and not very conspicuous costæ on each elytron; the first commences at the base some distance from the suture and runs obliquely to the suture which it nearly joins at a distance from the base of about a third of the length

of the elytron, and then runs (close to the suture) to the apex. The other costæ are straight, all commencing on the base of the elytron; the second quite reaches the apex, the other two not quite. On the first interval between the costæ there is a red spot near the apex, on the second a red spot a little further from the apex and another somewhat in front of the middle, on the third a red spot just behind the middle and another near the base.

In respect of sculpture and puncturation this insect closely resembles the European *D. crenata*, Fab., but is much narrower and more elongate.

I have a single specimen from Roseworthy, and also one from Port Lincoln, which was taken under the bark of a *Eucalyptus*. The latter specimen has all the sculpture better defined than the former, the anterior red mark on the third interstice of the elytra scarcely traceable, and the lateral margins of the thorax obsoletely crenulate, but I have no doubt of its specific identity with the Roseworthy example. I have also seen the species among some insects submitted to me by Mr. Rothe.

D. lineatocollis, sp. nov. Sat depressa; elongata; nigra vel piceo-nigra; capite antice (nonnullis exemplis), antennis, palpis, pedibusque, rufis; prothoracis lateribus leviter explanatis, vix distincte serrulatis, antice minus fortiter productis; elytris fortiter costatis, interstitiis crasse transversim biseriatim punctatis. Long. $1\frac{1}{4}$-$1\frac{1}{2}$ l. Lat. $\frac{2}{5}$-$\frac{1}{2}$ l.

Closely allied to the preceding; I observe very little difference, except in the following characters:—The head is more roughly punctured; the elytra are devoid of red markings and have the costæ more sharply defined; and the punctures in the two rows in each elytral interstice are transverse, running into each other and scarcely leaving any distinct intermediate space between them. The thorax also is very differently sculptured on the surface; on either side a strong longitudinal costa springs from the base a little nearer to the middle than half way between the middle and the posterior angle and proceeds nearly parallel to the lateral margin more than half way to the apical margin when it turns at an angle and runs obliquely towards the centre line, but before reaching it becomes parallel to the margin again and then turns outward towards the lateral margin and runs in an irregular slight curve back to the base which it reaches at a point rather nearer to the lateral margin than to the point where the inner costa takes its rise.

I have taken this insect occasionally both in the Port Lincoln district and also near Adelaide.

B. variabilis, sp. nov. Subopacus (elytrorum interstitiis alternis exceptis); niger, antennis tarsisque rufopiceis; prothorace transverso longitudinaliter corrugato, postice linea curvata impresso, lateribus angulatis; elytris postice rotundato-truncatis, apice productis. Long. 1—3 l.

Var. Colore piceo vel testaceo.

The thorax is gently transverse, the front margin strongly bisinuate and in the middle elevated, the anterior angles produced and acute; the outline of the lateral margins is very peculiar—from the apex of the anterior angles it is convex for a fifth part of its length, then it is slightly concave to just behind the middle where it is of the same width as at the commencement of the concavity, and at that point it is angulated and thence proceeds with a slightly concave curve to the base in such fashion that from the angle the thorax is gently contracted backwards. There is a slight vague depression on the front part of the disc and a little in front of the base there is a clearly cut arched line (its convex side turned towards the base) from which two fine lines run backward to the base. The elytra are strongly striated, the striæ rather indistinctly punctured. The alternate interstices are slightly shining, the third roundly convex—the fifth and seventh strongly, the ninth feebly, carinated. The interstices are devoid of distinct punctuation. The apex of each elytron is rather strongly produced (so that the hinder part of the lateral margin is deeply sinuate) and roundly truncated.

I know few insects more variable than this in respect both of size and color. It is widely distributed in South Australia and common. I have taken it also in Western Victoria. It occurs under the bark of *Eucalypti*.

I am not acquainted with *B. illusus*, Newm., and on that account should have hesitated to describe this species as new were it not that Mr. Pascoe (Journal of Ent., I., p. 465) in distinguishing his *B. equinus* from Newman's insect implies that the latter is totally unlike my *B. variabilis*.

B. tibialis, sp. nov. Sat nitidus; piceo-brunneus; prothorace subcordato leviter transverso, sat fortiter crebrius punctulato, punctis longitudinaliter confluentibus, latitudine majori antice posita, lateribus rotundatis, impressione obscura postice posita; elytris striatis, interstitiis punctulatis, his alternatim elevatis; tibiis fortiter dilatatis. Long. 1—2¾ l.

Var. Colore plus minusve rufo.

The thorax is widest immediately behind the anterior margin whence it narrows with a curved outline nearly to the base;

its sides then become parallel and the posterior angles are subdentiform; there is a scarcely noticeable impression on the front part of the thorax and a well marked one in front of the base. This latter consists of a short parallel-sided fossa, which is a little longer than wide and is not limited either before or behind by a definite line. In some examples the middle part of the fossa is scarcely depressed, so that the appearance is that of two short, parallel, longitudinal striæ. The sculpture of the elytra is exceedingly similar to that in *B. variabilis;* the elytra, however, are evenly glossy, the striæ are impunctate, and the interstices are punctate. The elytra are evenly rounded at the apex as in most other species of the genus. The widely-dilated tibiæ furnish the most striking character of this insect, by which it may be at once distinguished from all other species known to me; the antennæ also are exceptionally short and thick. This latter character probably differentiates it from *B. illusus* also—but however that may be, Mr. Pascoe (who appears to have examined the original type of *B. illusus*) states that that insect has a "deeply-impressed crescent-shaped mark" on the posterior part of its disc, and seems to speak of it as a decidedly larger species than *B. tibialis.*

I have taken this species in South Australia (Port Lincoln); also in Western Victoria.

B. costatus, sp. nov. Nitidus; piceo-rufus, elytris (suturâ infuscatâ exceptâ) dilutioribus; prothoracis postice angustati disco late concavo, spatio concavo postice in medio elevato, lateribus subrectis; elytris costatis, haud evidenter striatis, obsolete seriatim punctulatis, costis angustis. Long. $1\frac{1}{3}$—$1\frac{3}{4}$ l.

The colouring of the elytra (chestnut, with a dark sutural stripe), which seems to be constant, will distinguish this species from all its Australian congeners, having the disc of the thorax similarly sculptured, except *vittatus*, Newm., which has the elytra quite differently sculptured.

Thorax about as long as wide, widest in front, thence gradually narrowed to the base, sides nearly straight, obsoletely angulated about the middle; front margin strongly elevated and produced in the middle, anterior angles somewhat prominent, hind angles obtuse and well defined, surface coarsely punctured with oblong punctures tending to longitudinal rows, disc occupied by a very wide depression which commences and is at its deepest a little behind the anterior margin, from the base a nearly impunctate space not depressed below the general level of the surface (and so elevated above the floor of the depression) runs up the depression to about the centre of the thorax. The sculpture of the elytra (which are of ordinary form

at the apex) is peculiar. At the base of each elytron close to the scutellum a strong costa commences edged externally by a kind of stria, but both soon become obsolete, the stria being represented in the hinder three-quarters of the elytra by a scarcely traceable row of punctures; then follow at intervals three costæ, which at the base are about equally strong with the abbreviated costa, and run evenly to the apex; outside the last of these (which commences at the shoulder) on the lateral declivous surface of the elytra are some more obscure slender costæ. The intervals between the costæ are non-striate, wide, and shining, and are devoid of punctures excepting that a faint ill-defined row of punctures can be traced quite close to each costa.

I have seen only a few specimens of this insect, which occurs rarely under Eucalyptus bark near Port Lincoln, but probably a long series would show great variety in respect of size.

B. vittatus, Newm. I am not sure whether I know this species, of which I have not seen the original description. Mr. Pascoe, however (in the paper on "Bothrideres," already referred to), tabulates it as having on the prothorax a broad shallow depression more or less raised along the median line, and on the elytra a dark sutural stripe; and in distinguishing from it some of his own species he appears to intimate that it has the elytra (at least near the suture) punctate-striate. A common and widely distributed South Australian *Bothrideres* presents the above characters, and I should consider it almost certainly *B. vittatus*, except that it has the side of the thorax very strongly angulated in the middle, a character that I can hardly suppose Mr. Pascoe would have failed to refer to if it were present in Newman's type, *B. vittatus* is said to be a Victorian insect.

CUCUJIDÆ.

CRYPTAMORPHA.

C. Lindi, sp. nov. Minus elongata; sparsim longe pubescens; rufo vel brunneo-testacea; capite sparsim crasse obscure punctulato; prothorace quam latiori haud longiori, confertim fortiter punctulato; elytris sat fortiter punctulato-striatis, transversim obscure pone medium infuscatis. Long. $1\frac{3}{5}$ l., lat. $\frac{1}{2}$ l.

The head is very shining, with some sparse and lightly-impressed but coarse puncturation; a strongly impressed line extends from the origin of the antennæ to the base, and a smaller oblique furrow runs towards the eye. The length and width of the thorax are equal, and it is scarcely narrowed behind; the sides are almost parallel nearly to the base, whence they converge gently; they are set with about six long hairs

springing from minute obscure prominences. The striation of the elytra is very slight, but the serial puncturation very large and strong, the interstices between the punctate striæ very narrow, scarcely convex, smooth, and shining. The transverse infuscation behind the middle is very obscure (in some specimens scarcely traceable); it crosses the suture, but does not nearly reach the margins. The antennæ legs and under-side scarcely differ in colour from the upper surface.

Much less elongate, and much less narrowed behind than *C. Desjardinsii*, Guér., with the head and thorax much more coarsely punctured, the antennæ differently coloured, &c.; from *C. triguttata*, Waterh., and *C. optata*, Olliffe, it differs in the puncturation of its head, and the long erect pubescence with which its whole surface is sparingly clothed.

Not very uncommon at Port Lincoln.

C. Olliffei, sp. nov. Sat elongata; sparsim longe pubescens; rufo vel brunneo-testacea; capite sparsim distincte punctulato; prothorace quam latiori haud longiori, profunde minus crebre punctulato; elytris sat fortiter punctulato-striatis, transversim obscure pone medium infuscatis. Long. 2 l., lat. $\frac{3}{5}$ l.

I do not observe any difference in colour or markings between this species and the preceding. It is, however, considerably more elongate and narrow, with the puncturation of the head evidently stronger and more defined, and that of the prothorax very much larger and more sparing. In other respects it agrees very well with the description (above) of *C. Lindi*, differing from the other Australian species in respect of the same characters that distinguish *C. Lindi* from them.

I have taken this insect both at Port Lincoln and near Adelaide.

C. Victoriæ, sp. nov. Minus elongata; sparsim longe pubescens: fusco-testacea; oculis valde prominentibus; capite prothoraceque rufescentibus confuse infuscatis; hoc (leviter transverso) creberrime subtilius rugulose, illo crebre fortiter, punctulatis; elytris sat fortiter punctulato-striatis. Long. 2 l., lat. $\frac{3}{5}$ l. (vix.)

The single specimen before me of this insect is of a dull testaceous colour, the head and thorax reddish; much infuscated, but more on one side than the other, so that the infuscation is evidently abnormally distributed; there is a little obsolete infuscation about the base of the elytra also. The general form is somewhat intermediate between that of the preceding two, the prothorax by measurement being comparatively a little wider, however, while the head is much more strongly and closely punctured than in either of them, and the puncturation

of the prothorax is even closer and more rugose (though not coarsely so) than in *C. Lindi*. The eyes are even more prominent than in *C. Desjardinsii*. In other respects resembles the preceding two.

I have taken a single specimen in Western Victoria.

C. delicatula, sp. nov. Minus elongata; sparsim longe pubescens; rufo-testacea, pedibus dilutioribus, prothorace cuprescente; antennis gracilibus; oculis prominulis; capite crebre fortiter, prothorace (quam latiori vix longiori) creberrime obscure, punctulatis; elytris sat fortiter punctulato-striatis. Long. $1\frac{1}{3}$ l., lat. $\frac{2}{5}$ l.

In general form this little species resembles *C. Lindi*, though its elytra are a little narrowed at the base, and consequently less parallel. The eyes are almost as prominent as in *C. Victoriæ*, and the head is even more closely and strongly punctured than in that species, although the punctures are individually smaller. The thoracic puncturation somewhat resembles that of *C. Lindi*, but is very much closer and finer. Its comparatively long and slender antennæ distinguish it from all the other described Australian species of the genus. There is some obscure infuscation about the elytra which takes the form of several scarcely traceable fasciæ crossing the suture at intervals down its length, but not nearly reaching the margins.

Port Lincoln.

SILVANUS.

S. advena, Waltl. This widely distributed insect has occurred to me several times at Port Lincoln, doubtless introduced through the agency of commerce. I have not seen any previous mention of its occurence in Australia.

S. unidentatus, Fab.? I have taken, both in South Australia and in Victoria, an insect which I should have no hesitation in referring to this species were it not that Mr. Macleay has described a closely allied form under the name *S. castaneus*, which Mr. Olliffe in his recent "List of the *Cucujidæ* of Australia" distinguishes from the cosmopolitan insect by several characters—some of which my examples certainly present. I find that the thorax is decidedly longer and on the sides more sinuated than in average European specimens of *S. unidentatus*, also that its anterior angles are more prominent; but I do not observe the peculiarities of colour and puncturation that Mr. Olliffe mentions as characterising *S. castaneus*. Among European examples of *S. unidentatus* there is some tendency to variation in length of the thorax, and in Hawaiian specimens (which Dr. Sharp confirms me in referring to this species) the thorax is certainly longer than in ordinary types, and there is a tendency to other variety, such as some elongation of the

antennæ. Taking all these considerations into account I do not think that the specimens before me should be treated as specifically distinct from *S. unidentatus*, Fab., and it would appear that they are certainly not in all respects similar to those which Mr. Olliffe speaks of under the name *S. castaneus*, Macl.

CRYPTOPHAGIDÆ.

CRYPTOPHAGUS.

C. affinis, Sturm? (var.? *Australis*), Brevis; sub-ovatus; convexus; pube sat longâ vestitus; ferrugineus; elytris subdilutioribus obscure fusco-notatis; prothorace dense punctato, lateribus bidentatis, dente anteriori obtusiusculo. Long. 1 l.

This little representative of a genus not hitherto recorded, I believe, as occurring in Australia is so extremely close to the European *C. affinis* that I hesitate to treat it as a distinct species, all the more since *Cryptophagus* is a genus very liable to be disseminated through the channels of commerce; at the same time it presents tangible characters that entitle it to be named as being at least a localised variety. Compared with *affinis* it is slightly wider and shorter, and the anterior lateral projection of the thorax is evidently (though not very much) less strongly developed. The sixth, seventh, and eighth joints of the antennæ also appear a little more slender as compared with the preceding joints than they are in *affinis*, and there is a little obscure infuscation about the elytra of most specimens, forming an obsolete triangle about the scutellum (discernible still more faintly in some examples of *affinis*) and a scarcely traceable fascia across the middle of the elytra (not at all indicated in any of my specimens of *affinis*).

I have met with this species near Adelaide, and also in the Port Lincoln district.

LATHRIDIIDÆ.

MONOTOMA.

M. rufa, Redt. I have a specimen taken by me at Port Lincoln, which I am unable to distinguish from European examples of this insect. It is, however, extremely small, measuring barely one line in length, and the antennæ appear a little elongate, so that it is just possible it may be a distinct closely allied species. The genus *Monotoma* has not, I think, been previously recorded as occurring in Australia.

LATHRIDIUS.

L. nodifer, Westw. This ubiquitous insect has not, so far as I know, been mentioned hitherto as Australian. At any rate

its name does not occur in Mr. Masters' catalogue. I have, however, taken it not uncommonly near Port Lincoln, generally under the bark of *Eucalyptus*.

L. costatipennis, sp. nov. Sat nitidus; minus elongatus; convexus; brunneus; antennis brevibus; capite longitudinaliter canaliculato; prothorace areolato pone medium constricto; elytris inæqualibus sat crasse seriatim punctulatis; interstitiis alternis subregulariter costatis. Long. 1 l.

Antennæ of the length of the thorax; basal joint large, the second a half smaller, joints three to eight much smaller still and subequal, nine and ten considerably larger and produced on the inner side, scarcely different from each other in size; apical joint about double the size of the tenth, equal to the basal joint, obliquely truncate at apex; head rather roughly and coarsely punctured, with a median channel; thorax moderately constricted behind the middle, its length and breadth scarcely differing, widest across the front, its anterior angles somewhat rounded but by no means effaced, its surface intersected by costæ (the interspaces of which are for the most part concave), there being a well-marked wavy costa on either side of the median line, another well marked forming the lateral margin, and some obscure ones besides; elytra with a vague transverse depression a little behind the base, and another immediately before the middle, marked with rows of rather large coarse punctures, the alternate interstices being sharply and evenly cariniform; the first and third of the costæ thus formed uniting at the apex, the second much shorter.

This insect bears much resemblance to *L. nodifer*, from which I observe the following distinctions:—The thorax is comparatively wider in front, with better marked anterior angles, and on the elytra the interstices of the rows of punctures are alternately quite flat and evenly keeled. From many other species of the genus it is distinguished by the two transverse depressed spaces (one behind the other) in the front part of the elytra.

I have taken a single specimen in Western Victoria.

L. satelles, sp. nov. Minus nitidus; minus elongatus; convexus; brunneus; antennis brevibus; capite longitudinaliter canaliculato; prothorace areolato, pone medium constricto; elytris æqualibus crasse seriatim punctulatis; interstitiis alternis regulariter costatis. Long. $\frac{5}{6}$-1 l.

Very closely allied to the preceding, but I think certainly distinct. The elytra are entirely devoid of transverse depressions, and have evidently larger punctures forming the longitudinal rows, and the alternate non-carinate interstices are not quite so flat and shining. The colour varies from dark blackish brown to light brownish testaceous. In the darker examples

the antennæ are pitchy at the apex. The thorax is about equally wide across the front and the base.

Port Lincoln; not rare.

L. semicostatus, sp. nov. Minus nitidus; minus elongatus minus convexus; piceo-niger; labro mandibulis palpis et antennis testaceo-rufis; capite longitudinaliter canaliculato; prothorace longitudinaliter costato pone medium minus fortiter constricto; elytris seriatim punctulatis; interstitiis 3° (apicem versus), 5° et 7° costatis. Long. $\frac{5}{6}$ l.

Much more depressed than either of the preceding two; the antennæ and head scarcely different from the same parts in *L. costatipennis;* the thorax (evidently wider in front than behind) with some distinct, though only slightly raised, longitudinal costæ, no evident transverse costæ, and the interspaces hardly concave; the elytra with very distinct rows of rather large punctures; the interval between the second and third of these rows scarcely raised except near the apex, the intervals between the fourth and fifth and between the sixth and seventh rows finely but distinctly keeled throughout their length.

The costæ on the thorax and elytra are very much less raised than in either of the preceding. The almost complete disappearance of the costation, in its anterior two-thirds, of the interval between the second and third rows of punctures on the elytra is a marked character.

Port Lincoln; a single specimen under bark of *Eucalyptus*.

L. nigromaculatus, sp. nov. Minus nitidus; sat elongatus; sat convexus; testaceus, nigro-maculatus; capite longitudinaliter canaliculato; prothorace obscure areolato, pone medium constricto; elytris sat fortiter punctulato-striatis, interstitiis convexis. Long. $\frac{5}{6}$ l.

The basal part of the thorax is quite as wide as the front; the raised lines and convex spaces on its surface do not seem to differ much in pattern from those on the thorax of *L. costatipennis*, but they are quite faint, and not easy to trace even under a Coddington lens. The elytra are distinctly striated; each stria has a row of large coarse punctures; the interstices are decidedly convex, but the alternate ones scarcely more so than the rest. A transverse depression crosses the elytra a little behind the base. The black markings on the elytra consist of an elongate blotch in front of the middle, between the second and fifth striæ, two or three spots near the lateral margin in the front half, the hinder part of the suture, and an irregular fascia which crosses the suture a little behind the middle, but does not nearly reach the lateral margins. Examples thus marked bear a striking resemblance to some of the small species of

Helophorus, but in some specimens the dark markings are more obscure, and the resemblance to *Helophorus* less noticeable.

Woodville, among dead leaves, &c. Not common.

L. minor, sp. nov. Sat nitidus; minus elongatus; minus convexus; rufus; capite haud canaliculato; prothorace angusto, antice quam postice paullo latiori, obsolete areolato, pone medium constricto; elytris seriatim punctulatis, interstitiis alternis subtiliter costatis. Long., $\frac{2}{3}$-$\frac{3}{4}$ l.

Resembles *L. semicostatus* in shape but smaller, of a lively red colour, the thorax much narrower and the elytra differently costate. The thorax is scarcely a third the width of the elytra at their widest part, its surface is obscurely areolate, but the raised lines limiting the concave spaces are so faint that they cannot be traced continuously. The punctures in the rows on the elytra are shallow and rather small, the elevated alternate interstices very fine and slightly raised but quite clearly traceable. The third of these costæ is the most conspicuous; it commences at the shoulder and near the apex turns inward towards the suture, which it nearly reaches. In some examples the head and thorax are a little infuscated.

Port Lincoln; also near Adelaide.

L. apicalis, sp. nov. Minus nitidus; minus elongatus; sat convexus; fusco-brunneus; capite canaliculato; prothorace antice quam postice paullo latiori, distincte areolato pone medium constricto; elytris seriatim punctulatis, interstitiis alternis costatis; costis puncturisque apicem versus deficientibus. Long., $\frac{1}{2}$ l.

Rather closely allied to the preceding; apart from colour, however, this insect differs from it in being of a less parallel form (having the elytra considerably narrower at the base than behind) and in the sculpture of the elytra. These have the rows of punctures much more obscure and the raised alternate interstices evidently wider; the sculpture moreover becomes slight and sub-obsolete near the apex, whereas in *L. minor* it is most strongly defined in that part.

Port Lincoln.

L. punctipennis, sp. nov. Sat nitidus; sat elongatus; sat convexus; piceo-rufus; capite canaliculato; prothorace antice quam postice paullo latiori, areolato, pone medium constricto; elytris seriatim crassissime punctulatis; interstitiis alternis costatis. Long., $\frac{3}{5}$ l.

Very similar to *L. apicalis* in shape, but differs strongly from it and from all the preceding by the extremely coarse punctuation of the elytra. The punctures in the pairs of rows between the costæ are so large that the rows run into each other transversely and present the appearance of each interval between

the costæ being occupied by a single row of large quadrangular transverse pits, about 20 in each row. The costæ are very well marked.

Port Lincoln.

MYCETOPHAGIDÆ.

Typhœa fumata, Linn. I have taken this widely distributed insect at Port Lincoln. I believe it has not been previously recorded as occurring in Australia.

HETEROCERIDÆ.

HETEROCERUS.

H. Flindersi, sp. nov. Elongato-oblongus; niger, griseo-pubescens; prothoracis angulis posterioribus marginatis; elytris subtiliter punctulatis, testaceo-notatis; pedibus (genubus tibiarumque margine exteriori exceptis) prothoracis angulis anticis testaceis. Long. $1\frac{3}{4}$—2 l.

Head and prothorax opaque, excessively finely punctured, the latter narrow in front, wide behind; its sides gently arched, its posterior angles obtuse. Elytra not much wider than the thorax, finely (but as compared with most species of the genus not particularly so) and evenly punctured. The lateral margins are testaceous, the testaceous border dilated and running out towards the disc of the elytra just in front of and just behind the middle; on the disc of each elytron are five narrow elongate testaceous marks; two in front of the middle almost parallel to each other, the external one a little nearer the front than the other, two behind the middle, side by side, parallel, and in some examples coalescing, and one near the apex (varying in form from a mere line to the shape of the Greek letter gamma) which in most examples runs into the testaceous lateral border. On the underside the hind-body has a testaceous border. The legs are pale testaceous, the external margin of the tibiæ and (in many examples) the knees and even the inner margin of the tibiæ infuscated.

Port Lincoln; also on the banks of the Torrens near Adelaide.

H. multimaculatus, sp. nov. Sat elongatus; fuscus, griseo-pubescens; prothoracis angulis posterioribus marginatis; huic margine laterali, antennis, pedibusque, testaceis; *elytris pallide fuscis, longitudinaliter fusco multimacu-

* While this paper was in the press, I received from Mr. R. H. Pulleine a specimen *Heterocerus*, in bad condition and quite denuded of pubescence, which I believe to be *H. multimaculatus*. In that case, the species is evidently variable in respect of colour, as the example which forms this note has elytra entirely blackish-brown, except a longitudinal line from the base on either side the scutellum, a semicircle between it and the margin, the margin itself, and a few spots near the apex, all which are testaceous.

latis, confertim subtiliter punctulatis, leviter striatis. Long., $1\frac{3}{4}$ l.

In shape and sculpture the head and thorax do not differ much from the same parts in the preceding species but they are rather more shining. The elytra are scarcely wider than the thorax, and the whole insect has an elongate parallel facies. The suture is broadly blackish in its anterior fifth part, the remainder of its length being very narrowly blackish. A fuscous line commences about the middle of each elytron close to the suture and runs parallel to the suture, almost to the apex, where it merges into a fuscous cloud, which overspreads the hind part of the suture but does not quite reach the apex. On each shoulder is a dark fuscous mark shaped like a horse-shoe, its convex edge touching the anterior margin. Immediately in front of the middle of each elytron, near to the lateral margin, is a large blackish spot between which and the suture is a narrow longitudinal blackish line. A little before the apex there is a dark mark shaped like z. The blackening of the anterior part of the suture and the horse-shoe-like mark on each shoulder produce together the appearance of five short and somewhat parallel longitudinal lines running out from the base, of which the external two on either side are joined on the anterior margin. The puncturation of the elytra is finely rugose and very close—much closer than in *H. Flindersi*.

This insect seems to resemble *H. Australasiæ*, Waterh., in general form, especially in the slight narrowing of the elytra behind the shoulders, but to be distinguished from it by having the elytra evidently striated, and very differently marked. It is difficult to specify the differences from the Queensland *H. Mastersi*, Macleay (which it resembles in having striated elytra), owing to the brevity of the description of that insect; but the first word in the description, "black," would seem to preclude the identification with it of a species in which there is no genuinely black colour at all. Indeed, except for this expression "black," and the mention of the striation of the elytra, there is nothing in the description to show that *H. Australasiæ* may not be identical with it.

I possess a single specimen, taken near the Grange, on the banks of the Torrens.

LAMELLICORNES.

PACHYGASTRA.

I have before me three specimens of an insect which I cannot doubt is that described by Germar under the name *Pachygastra Tasmanica*. The author is unsatisfactorily brief in characterising the elytral sculpture, saying merely that the elytra are faintly seriate-punctate, with interstices confusedly punctured,

and a single sutural stria. In the species that forms the subject of this note the rows of punctures (besides that in the strongly marked sutural stria) are eight in number on each elytron, and are placed in very obsolete striæ, running in pairs, the interval between the two of each pair being slightly convex, narrow, and scarcely punctulate, while the intervals between the pairs are wide, flat, and distinctly punctured. Germar, moreover, gives no information regarding the propygidium and pygidium of his insect. In the specimens before me the former is finely and closely punctured, the latter coarsely and sparingly, but not deeply; and both are densely clothed with long hairs. The great width and strong external bidentation of the anterior tibiæ, and the peculiar structure of the antennæ, together with the long dense villosity of the underside and legs are well marked characters mentioned by Germar, the presence of which in the specimens before me seem to justify their identification with *P. Tasmanica*, more especially as I know that one (at least) of them was taken in the immediate vicinity of the place where most of the species described by Germar were collected.

Assuming the correctness of this identification, I think that this insect must be regarded as the type of a distinct genus, for which, of course, Germar's name *Pachygastra* must be used. Burmeister assigns the insect to *Haplonycha*. According to Schaum, Germar used the name *Pachygastra* by accident for *Prochelyna*, to which genus however that great authority, M Lacordaire, greatly doubts its appertaining. Having dissected a specimen, I am able to say that it cannot be referred either to *Haplonycha* or *Prochelyna*, the six-jointed club of the antennæ (in one sex at least) and the peculiar labrum and front tibiæ forbidding its association with the species for which M. Blanchard founded *Haplonycha*, while the toothed maxillæ separate it widely from *Prochelyna*. This last named character seems inconsistent with any close relationship to the insects associated by Dr. Sharp under the name *Systellopides*, to which, nevertheless, I believe it in reality allied. [It is worthy of note that in one genus of that group, Systellopus, the learned author mentions the presence on the maxilla of a "small obscure black tubercle or tooth."] In one of the specimens before me the apical ventral segment is evidently longer than in the other specimens, from which I conclude that both sexes are represented in this short series, and that the differences between them are very slight. The following characters no doubt include some that may be considered generic; clypeus very strongly concave, separated from the forehead by an almost straight impressed suture; its outline nearly semicircular, its margin scarcely elevated close to the forehead, but

(owing to the forward deepening of the concavity of the surface) becoming more so towards the front, till in the middle of the anterior edge it forms a rampart about half as high as the whole clypeus is long. The front face of the clypeus is perpendicular, and somewhat higher than the apical joint of the maxillary palpi is long; at the bottom of this perpendicular face the labrum projects in a plane exactly at right angles with the plane of that face. The labrum is a thin plate scarcely at all thickened in the middle, and only very slightly bent into an arch transversely; it is widely gently and triangularly emarginate in front with rounded front angles and sides, its width about three times its greatest length; it projects forward from the perpendicular face of the clypeus in such manner that each of its lateral margins is about as long as the apical joint of the maxillary palpi, and that its length down the middle is about half that of the sides (I do not know any other Australian *Melolontha* whose labrum approaches this form). The mentum is a little longer than wide, with its ligular suture not defined, abruptly narrowed at the insertion of the labial palpi and continuing to contract slightly thence to the apex which is subtruncate and about half as wide as the base; the surface is clothed with long hairs, and a membranous lobe projects obliquely on either side underneath the basal joint of the labial palpi. Of these latter the basal joint is elongate-cylindric, the second almost globular, the third subconic, and about equal in length to the first. The maxillæ are of the same length as the mentum and of a very simple form, the outline externally being a slight even curve and internally an almost straight line; there are three or four distinct sharp teeth on the inner margin near the apex. The maxillary palpi are inserted very near the apex of the maxilla, than which they are not much longer; the basal joint is very small, the second and fourth about equal to each other, the third decidedly shorter than the second or fourth. The club of the antennæ is much longer than the other joints together, and is scarcely shorter than the entire head; its basal joint is a little shorter than the rest; of the joints not belonging to the club the first is longer than the other two together, and in shape is bent piriform; the second joint springs from the inner side of the first a little before its apex, and resembles the first in shape; the third is equal to the second in length, and is somewhat parallel-sided, in one example, however (probably a male), having a strong sharp tooth projecting from its inner face. The anterior tibiæ are very peculiar; the external margin is strongly dilated with a curved outline to a distance from its base about equal to the length of the antennal club, at which point the tibia is about

two-thirds as wide as the antennal club is long; at this point a deep external emargination cuts the tibia half through, which thus reduced in width continues gradually contracting with a curve outwards till this lower contracted piece is a little more than half as long as the part above the external emargination, and is narrowly rounded off at the apex. The anterior tarsus is inserted at the part where the tibia is at its widest; a strong spine (as long as the basal joint of the tarsus) springs from the tibia just above the insertion of the tarsus; this latter is considerably longer than its tibia; the apex of its basal joint is about level with the extreme apex of the tibia. The intermediate and especially the hind tibiæ are much compressed and dilated towards the apex, the greatest diameter of the latter at the apex being scarcely less than half the length of the whole limb. These tibiæ have only one well-defined transverse carina each; the intermediate tarsi are about half again and the hind tarsi twice as long as their tibiæ. On the upper surface the hinder part of the head bears a number of long erect hairs; a fringe of similar hairs runs along the lateral margins of the prothorax; a dense mass of long woolly hairs protrudes from the base of the prothorax over the base of the elytra; the propygidium is thickly and the pygidium thinly clothed with long pubescence. On the under side the whole surface in front of the hind body is buried in very dense long and woolly pubescence which extends itself, though with less density, along the sides of the hind body. The femora and tibiæ are fringed with long hairs not very closely placed. The abdominal stigmata seem to be of the usual *Melolonthid* type and arrangement.

For the benefit of anyone who may not possess a copy of Germar's memoir I will complete the above remarks by saying that the insect which forms their subject is from 9 to 10 l. long and about 6 l. wide. It is of a clear chestnut brown colour, with the head darker, the external part of the anterior tibiæ and the apices of the other tibiæ black, and the pilosity pale fawn coloured. The hinder part of the head is closely and strongly and the clypeus and prothorax scarcely less strongly but much less closely punctured.

The three specimens known to me of this species were taken at various places around Adelaide.

As far as I can ascertain no insect has been described that can be considered congeneric with this.

MACLEAYIA.

This genus (described by me on page 29 of the present vol.) is evidently near to *Microthopus*, Burm., with which it is just possibly identical, if Dr. Burmeister might have been in error

in regarding as a male the specimen on which he founded his genus; although the antennal characters he gives would not be *quite satisfactory* if regarded as describing even the *female* of my *Macleayia*. I draw attention to this because there is undoubtedly very little difference between *Microthopus* and *Macleayia*, except in respect of their antennal peculiarities. Neither of the insects I described as appertaining to *Macleayia* seems to be specifically (even if it should prove to be generically) identical with *Microthopus castanopterus*.

RHOPÆA.

This genus is characterised with extreme brevity in the "Insecten Deutschlands (A.D. 1848)," where its author (Dr. Erichsen) introduces it (quite casually) into a tabulation of the *Melolonthid* genera, its place in which indicates some particulars regarding its antennæ, labial palpi, and claws. A note is added as follows: "New genus from New Holland; antennal club of the male six jointed, pygidium blunt at apex." Two years later M. Blanchard described the species (from N.S.W.) on which Erichsen had founded the genus under the name *R. Verreauxi*. Five years later still Dr. Burmeister characterised the genus at much greater length, slightly altering the definition of its antennæ in order to admit into it *Melolontha heterodactyla* of Germar. Finally, in 1856, M. Lacodaire mentioned the characters of the genus in his "Genera des Coléoptères," but ignored the alteration that Dr. Burmeister had made, remarking that Germar's insect ought to be the type of a new genus.

I am acquainted with a species which, I am quite satisfied, is *R. heterodactyla* of Germar, and with another species which I am satisfied cannot be generically separated from it, although the number of joints in its antennal club is different. There seems to be no good reason for excluding either of these from *Rhopæa* apart from the difference in the number of joints composing the antennal club, and I cannot look upon that alone as a valid generic distinction, especially when it is noted that the club seems to be formed in each case upon the same plan, the basal two and the apical six joints in all these species showing little variation, and the difference depending on whether joints three and four belong to the dilated or the undilated series. I think therefore that Dr. Burmeister should be followed in this matter, and I have no hesitation in attributing to the genus *Rhopæa* the following species although its male has an antennal club consisting of eight joints.

R. magnicornis, sp. nov. Minus elongata, breviter necdense pubescens; rufescens (nonnullis exemplis prothoracis disco obscuriori); capite prothoraceque densissime, elytris

duplo, punctulatis; subtus sterno dense longe villoso, abdomine breviter pubescenti

Maris flabello 8-articulato. Long. 12 l. Lat. 6 l.

The resemblance of this insect to *R. heterodactyla*, Germ., is very striking indeed. Placed beside that species it is somewhat wider and less elongate, with the thorax decidedly though slightly (in *heterodactyla* it is *hardly*) lobed behind, its margins a trifle less strongly crenulate (perhaps only an individual aberration), and its surface distinctly less finely and closely punctured. There does not appear to be any tangible difference in the sculpture of the elytra or pygidium, or in the structure of the legs. The antennæ are quite different; the basal joint is elongate piriform, the second very small, the third not much shorter than the first but prolonged internally at the apex into an elongate lamina not much shorter than each of the following seven joints, which with it form an arched club not much shorter than the anterior tibia.

There is a single specimen in the South Australian Museum marked as having been taken in South Australia.

N.B.—The South Australian Museum possesses also a specimen which I cannot doubt is the female of this species. It has the clypeus evenly rounded in front, the thorax more narrowly and distinctly lobed behind, and the antennal club smaller and only six-jointed, the basal two joints as in the male, the third longer than the first and cylindric, the fourth feebly spined on the inner side. The apical ventral segment is very much shorter than in the male. The tarsi do not differ noticeably from those of the male, the hindmost pair in both sexes being scarcely shorter than their tibiæ.

HOLOPHYLLA (*Erichsen*).

This genus is so uncertainly characterised that there is a risk in attributing any species to it. It originally appeared in the "Ins. Deutsch." merely in a tabulation of the "Tanyproctini" with a note of three lines attached, mentioning two or three characters and stating that it was from New Holland. From its place in the tabulation it would appear that it has the abdominal segmental sutures not soldered together and only a single tooth on the claws. Dr. Burmeister (Handb. der Ent.) characterises the genus much more fully, but states that Erichsen was mistaken in saying that the abdominal sutures are not soldered together, and also (without remark on the discrepancy) attributes two teeth to its claws. Dr. Burmeister, however, does not compare *Holophylla* with *Rhopœa*, which from the description it must resemble very closely. Indeed, I cannot from the description discover any tangible distinction mentioned except that the joints of the palpi in the

former are much swollen, and that the head is wider than in *Rhopæa*. M. Lacordaire (in the "Gen. des Col.") throws no light on the matter, as he has not seen the type, but merely remarks on the original description.

The following species I attribute to *Holophylla*, as that genus is characterised by Dr. Burmeister. It presents all the characters definitely assigned to the genus, and differs notably from *Rhopæa* in the shortness of all its palpi, the joints of which (except the apical of the maxillary) are conspicuously swollen. Whether it be a true *Holophylla* or not it is evidently new and cannot be assigned to any other genus. Evidently belonging to the true *Melolonthidæ* it differs *inter alia* from *Rhopæa*, as already mentioned, and from *Lepidiota* and *Lepidoderma* in the entirely different structure of its antennæ. From the *species* of *Rhopæa* it differs as follows *(inter alia)*:—From *Verreauxi* (known to me only by description) in its seven-jointed antennal club; from the other two in its very much more sparingly punctured prothorax, &c., &c.; from the already described species of *Holophylla (furfuracea*, Burm.) it differs by its larger size, spurred anterior tibiæ, &c., &c.

H. Australis, sp. nov. Sat nitida; elongata-ovata; supra pilis adpressis et setis fulvis longis erectis vestita; subtus antice dense fulvo-pilosa, postice breviter pubescens; nigro-fusca, antennis, oris membris, prothoracis lateribus, abdomine (inparté). et pedibus pallidioribus; supra duplo-punctata; tibiis anticis apice intus unispinosis. Long. 10 l., lat. 5 l.

Maris flabello 7-articulato.

The erect hairs on the upper surface are thick and long on the head, prothorax, and scutellum; on the elytra they grow shorter and more sparing backward. The clypeus is sinuately truncate in front, its margins strongly elevated, its surface coarsely punctured; the hinder part of the head is closely, roughly, and finely punctured; the declivous front part of the clypeus (visible from beneath) is pale testaceous. The prothorax is a trifle more than half again as wide as down the middle it is long, and is nearly twice as wide at the base as in front; its sides are crenulate and moderately rounded; its anterior angles are little marked, its posterior obtuse; its surface is sprinkled (closely at the sides, sparingly in the middle) with small and larger punctures, from the former of which spring short adpressed hairs, from the latter long erect ones. The scutellum is punctured like the prothorax. The elytra are similarly sculptured in respect of the small punctures, but the larger ones (while similar near the base) are confused behind by various obscure ill-defined furrows or wrinkles (somewhat

transverse near the margins), among which may be faintly traced some four or five running lengthwise down the elytra besides a well-defined sutural stria; the intervals between some of these furrows are not quite flat. The pygidium is closely and obscurely punctuate, and is clothed with very short, very closely set, erect hairs. The colour of the hind body varies from obscure ferruginous, a little clouded with dark brown, to nearly uniform dark brown. The legs do not seem to differ at all from those of *Rhopæa*, having the anterior tibiæ tridentate externally, the four posterior with a small external spine instead of a carina. The anterior tarsi are a little longer than, the intermediate equal to, the posterior a little shorter than, their tibiæ. On the hind tibiæ the inner apical spine is noticeably longer and straighter than the outer one.

In the male the basal joint of the antennæ is pear shaped and not very elongate, the second very short, the third nearly as long as the first (bent outwards, but with a strong angulation on the inner margin), the fourth slightly shorter than the remaining six, with which it forms a very elongate (as long as the anterior tibia down to the insertion of the tarsus) and narrow club.

In the only female before me the club is unfortunately broken off both antennæ; the apical ventral segment is very short.

I have received this insect from Mr. Rothe, of Sedan; there is a specimen from Kangaroo Island (taken by Mr. Tepper) in the South Australian Museum, which also possesses a specimen much paler in colour from Port Victor.

N.B.—I should conjecture that the apical spurs of the anterior tibiæ had been accidentally broken off the type on which Dr. Burmeister's description is founded. If this were the case *H. Australis* would still differ from it in its much larger size (*furfuracea* is said to be "somewhat smaller than *Rhiz solstitialis*") and in the well-defined sutural stria of the elytra, &c., &c.

LEPIDIOTA.

L. Rothei, sp. nov. Elongata-ovata; convexa; supra sparsim, subtus densissime, albo-squamulata; capite prothoraceque sparsius profunde, elytris crebre sat fortiter, punctulatis; his singulis quadricostatis. Long. 8 l., lat. 4 l. (vix).

The clypeus is about four times as wide as long, reflexed, and emarginate in front; it and the head are covered not very closely with large deep punctures. The prothorax is nearly twice as wide as down the middle it is long; its base is nearly half again as wide as its front margin; its sides are very strongly dilated, the prothorax being at its widest just behind

the middle; its surface is strongly punctured, very closely on the sides, quite sparingly in the middle; the lateral margins are crenulate. The scutellum is punctured uniformly with the disc of the prothorax. The elytra are widest considerably behind the middle; they are punctured rather more finely and much more closely than the disc of the prothorax, the distinctness of the puncturation being obscured by a great deal of transverse wrinkling; the system of puncturation is interrupted, but the transverse wrinkles only partially so by four very slightly elevated shining costæ on each elytra. The pygidium is punctured coarsely and closely, but not deeply, the propygidium only very obscurely. Each puncture on the upper surface is occupied by a small white scale, which in the punctures about the middle line of the insect scarcely protrudes and from those on the sides protrudes only slightly. The underside femora and tibiæ are punctured, the hind coxæ and hind body very closely, finely, and shallowly, the rest more strongly and sparsely. The puncturation of the underside, however, is quite hidden by mingled white and brownish scales, which are very closely packed except on the femora and tibiæ. The anterior tibiæ are strongly tridentate externally; the four hinder tibiæ have no distinct transverse carina, but an external spine on the middle of each of them. The hind tarsi are shorter than their tibiæ. The basal joint of the antennæ is quite half as long as the rest together. The club consists of three short joints.

A single specimen has been sent and kindly presented to me by Mr. Rothe, of Sedan. From its elongate apical ventral segment I think it is a male.

PANSCHIZUS.

P. pallidus, mihi. I think it not improbable that this insect (described by me on page 51 of the present vol.) is identical with *Anoplostethus opalinus*, Brullé, of which I had not seen the original description at the time I wrote. The genus *Anoplostethus* is stated by its author to have the claws all simple, except that the larger intermediate claw is very slightly bifid, and M. Lacordaire (Gen. des. Coléoptères, III., p. 373) states that *A. opalinus* is a very beautiful blue insect. As the insect I had before me is of a very pale yellow-green colour, and had the larger claw on all the tarsi quite strongly bifid, I took it to be certainly distinct from M. Brullé's species. The description of *A. opalinus*, however (now before me), agrees so well in general respects with my *P. pallidus* that I think they are probably founded on the two sexes of the same insect; as I have seen two specimens of it (one of them quite freshly taken), both agreeing in colour, and being neither blue nor especially

beautiful, I am quite unable to account for M. Lacordaire's statement. It will be observed that in my description of *P. pallidus* I mentioned its affinity to *A. opalinus* and its differing in colour and in the structure of the claws.

NOVAPUS.

N. Adelaidæ, sp. nov. Late oblongus; sat nitidus; subtus dense rufo-hirsutus; prothorace basin versus angustato, margine basali integro; elytris subpunctulato-striatis; scutello vix, vel obscure lineatim, punctulato. Long. $8\frac{3}{4}$, 11 l.; lat. (elytrorum) $4\frac{1}{4}$—5 l.

Mas. capite cornu lato, erecto, apice leviter dilatato et emarginato; prothorace elytris latiori, medio a margine anteriore fere ad basin late profunde impresso.

Fem. capite haud tuberculato; prothorace elytris angustiori, haud impresso.

Closely allied to *N. crassus*, Shp., and differing from it chiefly by the female having no tubercle on its head and no impression on the front of the prothorax. The scutellum of *crassus* is said to be "strongly punctured." In this insect the extreme scutellar puncturation I have seen is a line of punctures following the shape of the scutellum a little within the margins, but generally the scutellum has only traces of such line or is smooth. The following are characters of *N. Adelaidæ* not mentioned by Dr. Sharp as possessed by *N. crassus*:— Front margin of prothorax suddenly concave behind the clypeal horn; prothorax fringed all round with pale reddish hairs, and pygidium similarly fringed round all its edges. The thorax of the female as compared with that of the male is more strongly punctured than I should from description judge it to be in *N. crassus*. In both sexes the prothorax is widest in front of the middle, and is narrowed thence to the front and base, but so that the actual front margin is less than half the width of the base.

I have seen a good many specimens taken in the Adelaide district.

N. striato-punctulatus, sp. nov. Late oblongus; sat nitidus; subtus dense rufo-hirsutus; prothorace basin versus minus fortiter angustato, margine basali integro; scutello confertim rugose punctulato; elytrorum disco antice sat fortiter punctulato-striato. Long. $12\frac{1}{2}$ l., lat. $6\frac{1}{4}$. l.

Mas. capite cornu sat lato erecto, apice leviter dilatato et emarginato; prothorace elytris haud latiori, medio a margine anteriori haudquaquam ad basin late profunde impresso.

Fem. Latet.

Differs from the preceding as follows:—The prothorax is less decidedly notched behind the head, its puncturation being coarser, its excavation occupying only its anterior four-fifths, and having less elevated sides, and its margins being less contracted behind (the base is fully seven-eighths of the greatest width); the scutellum is closely and roughly punctulate. The disc of each elytron to near the apex is strongly punctulate-striate, the sutural (except the sutural stria) and marginal portions being confusedly and strongly punctulate.

There is a single specimen in the South Australian Museum. The exact locality of its capture is not known.

PENTODON.

P. Australis, sp. nov. Piceo-niger; nitidus; clypeo antice bidentatus, postice bituberculatus; prothorace vix evidenter punctulato; elytris irregulariter striatis seriatim gemellato-punctulatis. Long. 7—8 l.

Maris tarsis anticis et unguiculo interno valde dilatatis.

Var. Corpore toto castaneo-rufo.

The colour is very variable, some specimens being almost black, some having the antennæ, palpi, and legs (especially the tarsi) reddish, some being entirely of a chestnut colour. The head is rather finely punctured and transversely wrinkled, except near the base, where it is almost smooth. The thorax is about one-third as wide again as long, is quite simple in both sexes, deeply emarginate in front, rounded and ciliated on the sides, with the front angles acute and the hind angles rounded; under a very strong lens the surface is seen to be dulled by minute close puncturation on which are some much more sparing and larger (but still very fine) punctures. On the disc of each elytron are about four striæ which are shortened before or behind, or at both ends, and also eight rows of gemellated punctures shortened more or less (in a variable manner—those near the suture are in some examples entire), some of which run in striæ; between the suture and the first row of punctures, and still more between the eighth and the lateral margin the puncturation is confused and very sparing; close to the apex it is confused and close. The anterior tibiæ in both sexes have three long, sharp, external teeth, with an additional one above and below the upper of the three, these additional teeth being usually very small, but in some examples not very much smaller than the others. On the underside there is scarcely any puncturation along the middle line, while at the sides there are rather fine punctures with very large ones sparingly intermixed, these last running in rows on the ventral segments.

In the male the ventral sutures are very strongly impressed, and there is an oblique membranous interval (very little narrower than the segment itself) between the fifth and sixth segments and another behind the sixth segment; the front tarsi have all the joints deformed (angulated beneath, angularly-emarginate at the apex and more or less transverse), increasingly so from the base onwards to the fifth joint, which is not transverse, but is a swollen mass about equal in bulk to the club of the antennæ and quite three times as large as the fourth joint. One of the claws is simple, the other a broad bent lamina, much like what one of the joints of the antennal club would be if similarly bent.

In the female the apical joint of the front tibiæ is a little swollen.

Notwithstanding the presence of organs of stridulation (in the shape of coarse confused granulation on the middle of the propygidium) the under surface of the elytra has the fringe of hairs which M. Lacordaire (Gen. Col. iii., p. 389 note) considers inconsistent with stridulation.

I have dissected a specimen and do not find it to differ generically from Pentodon.

This species is widely distributed in South Australia. I have seen but one male.

PSEUDOPIMELOPUS *gen. nov.*

Pimelopodi affinis; differt maris capite cornu armato, prothorace antice excavato (partis excavatæ margine postico medio elevato).

The genus *Pimelopus* was founded by Dr. Erichsen on a female *Dynastid* from Tasmania. Some time afterwards Dr. Burmeister described the male of a species which he called *Pimelopus nothus*. M. Lacordaire, in his great work on the genera of the *Coleoptera*, worked out from the descriptions of these two insects a complete diagnosis of the genus *Pimelopus*. The examination of a considerable number of specimens has forced me to the conclusion that *Pimelopus porcellus*, Er., and *P. nothus*, Burm., cannot be treated as generically identical. I am about to describe a new species from S. Australia as *Pseudopimelopus Lindi* which is evidently congeneric with and closely allied to *P. nothus*, Burm., but I have before me other species evidently congeneric with *P. porcellus*, Er., the males of which differ from the male of *Pseudopimelopus* in having merely a small tubercle on the head, and the thorax undistinguishable from that of the female. They possess the character of having elytra with a strongly swollen appearance and unusually wide in proportion to the thorax (as in the description of *P. porcellus*, Er.) which *Pseudopimelopus Lindi* has not, with

tarsi notably shorter than in *Pseudopimelopus* (another distinction noted by Burmeister between Erichsen's *P. Porcellus* and his *P. nothus*). In *Pseudopimelopus Lindi*, moreover, the hind and intermediate tibiæ have only one well defined transverse keel, and the basal joint of the hind tarsi is shorter across the apex than down its central line, while in the species I regard as true *Pimelopus* there are two strong transverse keels on the middle and hind tibiæ and the basal joint of the hind tarsi is decidedly wider across its apex than its length down the middle line. I have dissected several specimens without discovering any difference likely to be generic in the mouth organs.

P. Lindi, sp. nov. Nitidus; fusco-castaneus; capite ruguloso, clypeo antice bidentato; prothorace (maris parte excavatâ exceptâ) vix evidenter punctulato; elytrorum disco subtilius seriatim punctulato; subtus castaneo-pubescens. Long. 10—11 l. Lat 5—5½ l.

Mas. capite cornu recurvo armato; prothorace antice excavato, parte excavatâ reticulatim rugatâ, hujus margine postico medio angulatim elevato.

Fem. capite vix bituberculato; prothorace æquali.

The colour varies to some extent, the head and prothorax in many examples being darker, and the underside and femora paler than the other parts. The sculpture of the head and clypeus consists of coarse puncturation or wrinkles which in some specimens (mostly males) seems to be partly obliterated. The clypeus is strongly transverse and moderately wide in front, where it is strongly bisinuate in an upward direction; in the male the clypeal suture forms the well defined lateral edges of a stout recurved horn, of which the front face rises almost from the front margin of the clypeus and the hind face from the level of the front of the eyes. The distance from the front of the clypeus to the apex of the horn is about equal to, and the height of the hind face of the horn above the head is about half as great as, the greatest width of the clypeus. In the female the clypeal suture is not strongly marked, and being least evidently defined in the middle gives the head a slight appearance of being bi-tuberculate. The prothorax in the male is just about, in the female a little less than, half again as wide as long; the front margin is rather more than half as wide as the base; the sides are strongly (male) or moderately (female) rounded; in both sexes the surface is very shining and hardly distinctly punctured; in the male there is a large flat-bottomed excavation occupying the middle two-thirds of somewhat less than the anterior two-thirds of the segment. The floor of this excavation is finely and reticu-

lately wrinkled, its hind margin is well defined and runs up from either side to a somewhat tubercle-like angulation in the middle. The scutellum is impunctate. The elytra are not quite twice as long as the prothorax; their sculpture is as follows: a well defined entire sutural stria followed by a smooth space, then five rows of very fine punctures which scarcely pass the middle of the elytron (the third of these rows is somewhat confused by means of a few scattered punctures outside the row), then a space in which the punctures of about two rows seem to be mixed together, then two more distinct rows a little longer than the rest, then an impunctate space extending to the margin; all the system of puncturation is placed somewhat obliquely, inclining towards the suture hindward; the hinder fourth part of the space outside the system of puncturation, and the apex, are finely, confusedly, and rather closely punctulate. In both sexes the propygidium is coarsely rugose and clothed with golden hairs, and the pygidium is closely punctulate and wrinkled near the base (where there is a fringe of long golden hairs) and impunctate or nearly so behind. The underside (except the ventral segments which are punctured only near the lateral margins) and legs are much clothed with long reddish or golden hairs. The intermediate ventral segments are much shorter in the male than in the female. The anterior tibiæ are strongly tridentate externally in both sexes; the intermediate and posterior are unicarinate, with some indication of another carina near the base, the carina and the apex being fringed with a close-set row of thick scale-like bristles.

I do not find much tendency in this insect to vary. In some examples the sculpture of the head has a blurred appearance, as though it were rubbed out, and in some it consists of puncturation rather than wrinkles, and *vice versâ*. The development of the hind margin of the prothoracic excavation in the male also varies a little; in the specimen on which the above description was founded that margin rises in a nearly straight line from either side to the central prominence which is not directed upward so strongly as in some other examples, while it is not unusual to find the sides of the hind margin of the excavation more or less decidedly sinuous on either side of the central prominence.

Apparently allied to *Pimelopus nothus*, Burm. (which as mentioned above, is evidently a member of this genus). Dr. Burmeister distinguishes that insect from the next to it, *P. lavis* (of which only the female is known, and therefore the generic position is doubtful), by (among other characters) its clypeus not being bidentate in front; this character, together with the presence of some elytral striation, will also distinguish

P. nothus from *P. Lindi*, The elytra of *P. lævis* are devoid of distinct puncturation. Dr. Sharp has favored me with the information that *P. Lindi* bears close specific resemblance to *Cheiroplatys Fischeri*, Montrouzier (from New Caledonia), but it is, no doubt, distinct from that insect, being certainly not a *Cheiroplatys*.

I have specimens from Port Lincoln, Fowler's Bay, and Ouldea; that from the last-named locality was collected by Professor Tate. An unticketed female in the South Australian Museum has the clypeal suture a little strongly developed, but does not differ otherwise from the type.

PIMELOPUS.

As I have said above, I have no doubt that *Pimelopus porcellus*, Er., is congeneric (not as Dr. Burmeister supposed with his *P. nothus*, but) with certain forms of *Dynastidæ* in which the hind and intermediate tibiæ are strongly bicarinate transversely, and their tarsi very short with the basal joint extremely compressed and dilated, while the male has merely a small tubercle on the head and the prothorax quite simple. In all of them known to me the prothorax has a well defined impression at the base on either side. The first species described below may be *P. porcellus*, Er. It agrees fairly well with the rather brief description, but if it be identical probably Erichsen was in error in regarding the type as a female. In any case a full description will be useful.

P. porcellus, Er. (?) Oblongus Nigro-brunneus, capite obscure rugato; prothorace haud evidenter punctulato; elytris fortiter crasse punctulatis, disco fortiter striatis. Long. 9 l.; lat. 4½ l.

Mas. Capite tuberculato; tibiis anticis minus dilatatis externe leviter vel vix tridentatis.

Fem. Capite vix subtuberculato; tibiis anticis obtuse tridentatis.

The clypeus is not distinctly bidentate in front, and its margins are hardly reflexed; its suture is scarcely traceable, and in the male is furnished in the middle with a large, but only slightly raised, tubercle. The prothorax is not quite half again as wide as long, its base nearly twice as wide as its front margin, which is only slightly concave; its sides are rather strongly rounded and it is widest behind the middle; under a very strong lens its surface is seen to be minutely and closely coriaceous; it is margined in front and at the sides; its anterior angles are acute, the hind angles almost rounded off; its base is distinctly bisinuate. The scutellum is large and impunctate. The elytra are considerably wider than the prothorax and are

at their widest behind the middle; their sculpture is as follows:—A strong, deeply punctulate sutural stria, then a space sparingly and confusedly covered with large, coarse punctures, then six strongly punctured striæ, separated by convex interstices, then a space extending to the margin, in which the puncturation is confused and much finer, but which contains (near the front) traces of two seriately punctulate striæ; the discal system of punctured striæ fails a little before the apex, and is very oblique, so that the inner of its striæ is wide apart from the sutural stria at the base, but nearly meets it behind; the apex is closely, confusedly, and rather coarsely punctured; the humeral calli are almost smooth. The breast and legs are moderately clothed with longish red or golden hairs. The pygidium bears a puncturation which is rather coarse and close about the base, but becomes gradually fine and very sparing towards the apex. The front tibia are not particularly broad, and in the male are very obtusely tridentate (perhaps "strongly trisinuate" would be more correct) externally; in the female they are distinctly tridentate.

This appears to be a variable species. I have specimens differing from the types described above, in having the clypeus more distinctly bisinuate in front, the thorax perceptibly (under a strong lens) punctured, the anterior tibia (in both sexes) more sharply dentate externally; the female without any trace of a tubercle on the head, the size considerably larger (up to 11 l.). It is possible that I may be confusing several closely-allied species, but I find the foregoing differences from the type so uncertainly and variably blended in various specimens that I do not feel justified in treating them as distinct. The strong punctulate striæ on the disc of the elytra do not seem to vary, and are, I think, a leading character of the species.

Appears to be widely distributed in S. Australia, occurring at any rate from Port Lincoln to the Adelaide district.

P. crassus, sp. nov. Late oblongus; sat nitidus; rufescens; capite rugoso; clypeo antice haud bisinuato; prothorace obsolete punctulato; elytris minus fortiter punctulatis, antice leviter striatis; tibiis anticis externe fortiter tridentatis. Long. 11 l.; lat. 6¼ l.

Mas. Suturâ clypei elevata in medio tuberculatâ.

Fem. Capite haud tuberculato.

In general form and proportions this species resembles *P. porcellus* in all respects except that it is even wider and more massive looking, with the sides of the prothorax evidently more strongly rounded. It differs as follows:—The clypeus is evenly truncate in front, with its suture distinct, in the male

forming a fine, distinct keel from the tubercle to the margins ; the elytra have on the space next the sutural stria only a few large faint punctures, then three pairs of rows of rather large, lightly impressed punctures placed in feeble striæ, both striæ and punctures failing a little behind the middle of the elytron, then a nearly impunctate space extending to the margin, and the apex is finely, faintly, and closely punctured. The pygidium, underside and legs do not differ noticeably from those of *P. porcellus* (?). The apical ventral segment in the male (as usual in this genus) has a sinuous line (which is ciliated with golden hairs) running across it from margin to margin.

The system of faint puncturation on the prothorax and the absence of any trace of a protuberance on the clypeus of the female will distinguish this species from *P. porcellus*, Er.

I possess a single pair taken by Professor Tate at Ouldea.

P. (? hujus generis) dubius, sp. nov. Oblongus; minus latus; nitidus; obscure rufescens; capite rugoso; clypeo antice subfortiter bisinuato; prothorace haud evidenter punctulato; elytris minus fortiter punctulatis, vix striatis; tibiis anticis externe fortiter tridentatis. Long. $7\frac{1}{2}$—9 l.; lat. $3\frac{3}{4}$, $4\frac{1}{4}$ l.

Mas. Suturâ clypeali elevatâ in medio tuberculatâ.

Fem. Capite haud tuberculato.

In the few examples that I have seen of this insect the suture is rather widely infuscate, and in some specimens also the head and apex of elytra (these latter parts I find liable to infuscation in all the species of the genus). The head scarcely differs from that of *P. crassus*, except in having the clypeus very distinctly bisinuate in front. The prothorax scarcely differs in shape or proportions from that of *P. porcellus* (?). Under a strong Coddington lens it is seen to be sprinkled towards the sides with very fine needle-point punctures. The scutellum is impunctate. The sculpture of the elytra is almost exactly as in *P. crassus*. The rows of punctures on the elytra, however, do not run noticeably in pairs. The pygidium and underside do not differ noticeably from those of the other species I have described.

I hesitate much to refer this insect to *Pimelopus*, and think it very likely that a new generic name may be required for it eventually. It is a distinctly narrower insect than any of the species described above, and has not the posteriorly swollen appearance that they present. Its middle and hind tibiæ also are less stout, and are only unicarinate on the external margin. In these respects it approaches *Pseudopimelopus*, but its tarsi and sexual characters are distinctly those of *Pimelopus*. As I have not a specimen that I can devote to dissection, I place the species for the present under *Pimelopus*.

I have seen specimens only from the Port Lincoln district; they were dug up from under the soil near the roots of a *Eucalyptus*.

CAVONUS.

Cavonus Sharpi, sp. nov. Supra nigerrimus; nitidus; subtus sat dense longe fulvo-pubescens; elytris obscure punctulato-substriatis, apice lævigatis. Long., 8 l. Lat., 5 l. (vix).

Mas. Prothorace disco antice excavato, margine anteriore in cornu brevi producto.

Fem. Latet.

Clypeus deflexed, rounded in front; it and the head roughly and closely punctured; an obscure transverse keel runs across the middle of the vertex, between which and the basal keel of the clypeus the forehead is feebly concave. The prothorax is about half again as wide as the distance from its base to the apex of the horn; the sides are moderately rounded, the base scarcely bisinuate and about twice as wide as the front margin. The excavation occupies the anterior three-quarters of the disc and its surface is coarsely and somewhat reticulately wrinkled; its sides are not elevated. The frontal horn of the thorax, viewed from the side, rises above the head nearly as much as the length of the clypeus; it is inclined forwards and a little turned up at the end, which is blunt. The scutellum bears a few scattered punctures. The elytra can scarcely be called "striate." They are marked with rows of punctures which do not nearly reach the apex, but hardly fail in front (except absolutely *on* the humeral callus). The pygidium is not very nitid, its puncturation well defined about the base but becoming feebler hindward. Differs from *C. armatus*, Sharp, in the presence of a frontal keel, in the shorter anterior horn of the prothorax, and in the absence of horn-like elevations of the sides of the excavation; also in the less indication of striæ on the elytra, and the greater regularity of the rows of punctures on the same. The elytra also are not quite so short in comparison with the prothorax.

A single specimen occurred at Port Lincoln.

C. sculpturatus, sp. nov. Supra nigerrimus; sat nitidus; subtus sat dense longe fulvo-pubescens; elytris fortiter sat æqualiter punctulato-striatis. Clypeo postice fortiter elevato-carinato. Long., 9 l. Lat., 5 l.

Mas. Prothorace disco antice excavato, margine anteriore in cornu sat elongato producto.

Fem. Latet.

The general resemblance of this species to the preceding and to *C. armatus*, Shp., is so close that it will save useless repeti-

tion if I merely specify its distinctive characters. The antennal club is shorter, being not quite so long as the preceding joints together; the clypeus is quite strongly transverse, and is separated from the vertex by a strongly elevated keel; the excavation of the thorax scarcely extends beyond the anterior two-thirds of that organ; the frontal horn of the thorax is distinctly longer than that of *C. Lindi*, and (as in that species) is more erect than that of *C. armatus*, being also much stouter than that of either of its congeners; the scutellum has a strongly punctured furrow following its outline a little within its margin; and the elytra are strongly punctulate-striate, the sculpture continuing, almost without diminished strength, to the apex. The whole insect is a little more elongate than either of its congeners.

I have a single specimen taken by Professor Tate at Ouldea.

C. parvus, sp. nov. Supra nigerrimus; subtus sat dense longe fulvo-pubescens; elytris obscure punctulato-substriatis, apice lævigatis; fronte transversim concava. Long. 6 l., lat. 3½ l. (vix).

Mas. Prothorace disco antice excavato, margine anteriori angulatim elevato.

Fem. Latet.

The head is very peculiar; except in being less punctured behind, it resembles that of *C. Lindi* generally, and especially in having a transverse concavity running across it just behind the clypeus; this concavity, however, is not keeled behind, but the abruptness of its hinder declivity makes it much more conspicuous than that of *C. Lindi*. The prothorax also scarcely differs from that of *C. Lindi*, save that in place of the anterior horn the front margin is merely angularly defined in an upward direction, and scarcely pointed forward over the head. The scutellum, elytra, and antennæ also resemble those of *C. Lindi*. The apical joint of the maxillary palpi is distinctly less cylindrical and more acuminate at the apex than in the other species of *Cavonus* described.

I possess two specimens of this insect, one taken at Wallaroo, the other at Port Lincoln.

C. armatus, Shp. In the South Australian Museum are three very small specimens (the smallest barely 6 l. in length), which I cannot distinguish from this species. The clypeus, however, certainly appears narrower, and is more sharply margined behind. It may possibly be a distinct very closely allied form. There are also two specimens from Kangaroo Island, picked up dead in the scrub by Mr. Tepper, which differ from typical *C. armatus* in having the hinder elevations of the prothorax much blunter and less prominent; they do not appear to be specifically separable from the type.

NEOCAVONUS, *nov. gen.*

(Dynastidæ, Oryctomorphidæ).

Cavono affinis; differt mento antice deflexo, palpis maxillaribus incrassatis, prosterno antice vix acute producto, maris prothorace ad latera haud angulatim elevato.

The insect for which I propose this name has the general aspect of *Cavonus*, from which I cannot distinguish it by any characters likely to be generic except the four alluded to above. The first of these is very remarkable; it is as though the anterior contracted portion of the mentum were bent down and folded underneath, so that the organ appears to be widely truncated just in front of the insertion of the labial palpi (which spring from the under surface). The basal three joints of the maxillary palpi are like those of *Cavonus*, but the apical joint is remarkable; it is only about twice as long as wide, truncate at the apex, and of even width nearly to the base, where it is contracted. I think the mentum must considerably resemble that of *Teinogenys*, but the absence in the males of a frontal tubercle and the presence of a thoracic horn seem inconsistent with a place in that genus, even if the maxillary palpi be not (as implied in the diagnosis of *Teinogenys*) different.

N. niger, sp. nov. Supra sat nitidus, subtus dense sat longe brunneo-pubescens; niger, antennis palpis tarsisque piceis; elytris fortiter punctulato-striatis; clypeo fortiter elevato-marginato. Long. 8 l., lat. 4 l.

Mas. Prothoracis disco a basi ad apicem excavato, margine antico medio in cornu brevi elevato; antennarum clava sat angusta, articulis reliquis conjunctis paullo longiori.

Fem. Prothorace irregulariter longitudinaliter canaliculato; antennarum clava brevi.

Clypeus rounded in front, with an entire elevated edging, which is straight across the base. It and the hinder part of the head are rather rugosely punctulate. Prothorax about half again as wide as long, moderately finely, and closely punctured about the sides, the disc almost smooth except the excavated or depressed part, which in both sexes is largely but very shallowly punctured; in the male this is a *roundly* concave excavation commencing at the base and terminating in front in a conical horn slightly arched backwards and about as long as its distance from the clypeal suture; in the female it is a shallow interrupted impression not quite reaching the front. The sides of the prothorax are strongly rounded, the base gently bisinuate and about twice the width of the front edge, which is strongly concave and roundly produced in the middle. The scutellum is punctulate about its base and middle. The elytra

are decidedly wider than the prothorax, with nine rows of large coarse punctures, those on the disc running in striæ, which are well defined near the base, but fail near the apex. There are also some coarse punctures scattered about the elytra independently of the rows. The pygidium in both sexes is punctured in front and smooth behind. The legs do not appear to differ in the sexes; the anterior tibiæ are tridentate externally. The ventral segments are very much shorter in the male than in the female.

Taken by Mr. Rothe, near Sedan.

N. (?) occidentalis, sp. nov. Supra piceo-niger; antennis palpis pedibusque ferrugineis; nitidus; subtus longe sat dense fulvo-pubescens; elytris vix evidenter striatis, obscure seriatim punctulatis. Long. $6\frac{3}{4}$ l., lat. $3\frac{1}{4}$ l.

Mas. Prothoracis disco antice impresso, margine anteriori breviter acute elevato.

Fem. Latet.

Clypeus transverse, its front margin subtruncate and quite as wide as its base, its sides and front angles somewhat rounded, its edges not sharply defined, its surface somewhat concave transversely. Head abruptly depressed behind the clypeus, so that viewed from behind there appears to be a raised keel (which does not really exist), limiting the clypeus behind; the frontal depression is not distinctly limited behind, and is vaguely narrowed backwards. The head and clypeus are rather closely roughened, but hardly distinctly punctured. Prothorax sparingly and very finely punctured (scarcely perceptibly without a very strong lens), except in the depression, where the puncturation is coarser; the depression is nearly round, and occupies the middle third part of the width and the anterior third part of the length of the thorax. The anterior margin of the prothorax is scarcely half as wide as the base, it is moderately emarginate and is raised into a sharp tubercle in the middle; the sides diverge backward for the first third part of their length and then (viewed from above) appear to continue nearly parallel to the base, which is scarcely bisinuate. The real margin is invisible from above and is regularly rounded. The anterior angles are acute, the posterior roundly obtuse. The scutellum is roundly triangular, smooth, and with an impressed line down the middle. The elytra have a well-defined sutural stria and faint suggestions of other striæ here and there. They are sparingly and faintly punctured, the punctures in places tending to run in rows.

I attribute this insect only with hesitation to the genus *Neocavonus*. It is a narrower and more elongate parallel species than any other *Oryctomorphidæ* known to me. Its mentum,

maxillæ, and maxillary palpi, however, are exactly those of *N. niger*, while the apical joint of the labial palpi is distinctly shorter and more ovate. The legs (as in *N. niger*) are those of a *Cavonus*. The antennæ (as in *N. niger*) are ten-jointed; their club is not very wide, and in length scarcely exceeds the rest of the joints taken together. The shape of the clypeus is very different from that of *Cavonus* and *Neocavonus*, but there is sufficient clypeal variation among species that seem otherwise inseparable from *Cavonus* to render it prudent at present to make as few genera as possible until the structural characters of more species have been recorded. At a first glance this insect is distinctly suggestive of male *Isodon*, from which the elongate subcylindric basal joint of its hind tarsi, its totally-different clypeus, the elongate club of its antennæ, and the complete dissimilarity of its maxillæ, of course, separate it very widely.

I possess a single specimen taken by Professor Tate at Fowler's Bay.

CORYNOPHYLLUS.

C. Andersoni, sp. nov. Convexus; nitidus; castaneus; capite prothoraceque nigro-piceis; subtus dense fulvo-pubescens; prothoracis lateribus subtus concavis; elytris punctulato-substriatis. Long. 8 l., lat. 4½ l. (vix).

Mas. Capite medio fortiter transversim carinato; prothorace antice impresso, margine anteriori medio acute tuberculato.

Fem. Latet.

The clypeus appears to the eye scarcely transverse, but by measurement it is decidedly so. Its outline viewed from the front is a continuous curve, except at the base, which is straight, and is raised gradually (from a little within its extremities on either side) into a keel which is somewhat less elevated than the projection on the front of the thorax, and of which the upper outline is sinuate. The head behind the clypeus is flattened down the middle. The whole head is shallowly and coarsely, but not closely, punctured. The prothorax is very finely and very sparingly punctured, the puncturation more pronounced down the middle, and especially in the depressed part. Its base is about half as wide again as its front margin, its width quite twice its length down the centre. Viewed from above, its sides (which diverge from the anterior angles much more strongly than in any other of the genus known to me) seem to form three curves, meeting each other at roundedly obtuse angles; viewed from the side the margin appears to form from the base to the apex a strong even curve, the convex side of which is the upper (not the lateral) outline

of the prothorax—*i.e.*, as though one were looking through the arch of a bridge. The limits of the thoracic impression are very undefined, but it occupies something like the middle fourth part of the anterior third part of the surface. The front margin is very strongly bisinuate, and bears in its centre a sharp erect horn, which rises above the surface of the head a little more than the length of the second joint of the antennæ. The base of the thorax also is strongly bisinuate, and there is a vague impression on the surface at the base on either side. The scutellum is punctured, but is entirely covered by a bunch of long yellow hairs which project from under the thorax. The elytra are scarcely striated, and are marked with rows of moderately large shallow punctures, which become very obscure near the apex. The basal third part of the pygidium is moderately punctured, the apical two-thirds smooth, or nearly so. The legs are rather long and slender, especially the tarsi.

In the specimen before me the basal seven joints of the antennæ together are nearly two lines in length, the club is nearly three lines long, one and a half wide, being very much longer than the entire head.

Port Lincoln, a single specimen.

A second male example of *Corynophyllus* from the Port Lincoln district differs from the preceding in being smaller (7 l.) and of an uniform chestnut colour, with the prothorax proportionally narrower, its surface more strongly punctured and its sides less abruptly diverging from the anterior angles. As, however, it possesses the remarkable form of prothorax which makes that segment appear arched upwards when viewed from the side, and in other respects closely resembles *C. Andersoni*, I hesitate to regard it as really distinct.

I possess also a female *Dynastid* taken at Port Lincoln which I have no doubt is the female of this species. It differs from the male in its uniform dark piceous colour, in the clypeal suture being scarcely elevated, in the thorax being unarmed in front and having no impression on its surface except what looks like the middle part of a feeble longitudinal channel which is obsolete in front and behind, in its much shorter antennæ the club of which is shorter than the other joints together, in its prothorax much narrower in proportion to the elytra, and in the elytra being decidedly at their widest near the apex and longer in proportion to their width. The large tuft of hairs protruding over, and covering the scutellum, is absent.

C. modestus, sp. nov. Convexus; nitidus; antennis, palpis, tarsis, elytris, et abdominis segmentis ventralibus (segmento ultimo excepto) rufis vel rufo-piceis; elytris

striatis, striis fortiter punctulatis; pygidio æqualiter confertim subtiliter rugato. Long. 7 l., lat. 4 l.

Mas. Capite medio cornu brevi armato; prothorace antice profunde impresso, margine anteriori medio acute tuberculato.

Fem. (? hujus specei). Capite haud cornuto; prothorace antice haud impresso, margine anteriori vix angulatim producto.

In the male the head does not appear to differ much from that of the preceding species except that the clypeus is a little blunter in front with the impression on the hind part better defined; and that there is a strong conical horn, which is a little inclined backward, is blunt at the apex, and rises from the head on its hinder (perpendicular) side quite as much as half the length of the clypeus, being fully twice as high as the frontal elevation of the prothorax. The prothorax is rather more than half again as wide as its length down the middle; its base (which is scarcely bisinuate) is more than half again as wide as its front margin, which is strongly bisinuate, and raised in the middle into a small sharp tubercle; its frontal impression is very little larger, but much deeper, than that of the preceding species; its anterior angles are well defined, the posterior rounded off; its sides, viewed from above, appear somewhat regularly, but not strongly, rounded; the true margin, viewed from the side, appears somewhat sickle-shaped, proceeding backward in a rather straight direction for a little distance from the anterior angle and then making a strong curve outward, which is continued right round to the base of the prothorax; the surface is very finely and very sparingly punctured, except in the frontal impression where the puncturation is coarser and closer. The puncturation of the scutellum is coarse, and varies a good deal in closeness, some specimens having only about a dozen punctures on that organ mostly near the base, others having the same pretty closely punctured. The elytra are irregularly and not strongly striated, and are marked with rows of strong punctures, the punctures near the suture and margin tending to lose their serial arrangement. The pygidium is somewhat uniformly and strongly sculptured, the sculpture being of such sort as to give the segment a worm-eaten or corroded appearance. The antennal club is as long as the thorax, its width being about half its length.

The South Australian Museum contains a specimen which is certainly, I think, a female *Corynophyllus*. I refer it to this particular species chiefly on account of its possessing the same peculiar colouration of the ventral segments, of which the last is black while the rest are red. It differs from the male in

having the antennal club scarcely longer than the clypeus, the horn on the head replaced by a transverse keel, the thorax evenly convex, with scarcely any indication of a projection on its anterior margin, the sides of the thorax more regularly rounded, the pygidium more distinctly punctured with a less corroded appearance, and the ventral segments considerably longer.

There are several specimens of this species in the South Australian Museum, one of which is ticketed as having been taken at Port Victor.

ANEURYSTYPUS *gen. nov.*

Corynophyllo affinis; differt mento angusto elongato, palporum maxillarium articulo secundo quarto haud breviori, hoc apice truncato; antennarum clava angusta.

The greatest width of the mentum is less than half its length, its surface is concave. This genus appears to differ from *Teinogenys* by having the mentum differently shaped, also by its palpi (the description of *Teinogenys* implies that the palpi in that genus do not differ from those of *Corynophyllus*), and by the absence (in the male) of a tubercle from the head and the presence of one on the front of the thorax. From *Cavonus* and *Neocavonus* it differs (*inter alia*) widely in the shape of the mentum.

A. calvus, sp. nov. Castaneus; subtus dense longe fulvo-hirsutus; capite crasse nec crebre, pygidio (apice excepto) prothorace et scutello subtilius sat sparsim, punctulatis; elytris punctulato-substriatis. Long., 8 l., lat., 4½ l. (vix)

Mas. Prothorace antice impresso, margine anteriori acute elevato.

Fem. Latet.

The clypeus is transverse, rounded in front, and with a strongly turned up edge; it is separated from the rest of the head (which is flattened or a little concave) by a strong transverse keel. The prothorax is nearly twice as wide as down the middle it is long, and the base (which is bisinuate) is not much less than twice as wide as the front margin; this latter also is bisinuate, and bears in the middle a short sharp horn the height of which on its front (or more perpendicular) face is about equal to one-third the length of the clypeus; the frontal impression is shallow, ill-defined, and variable in size, its surface being punctured as the rest of the thorax; the sides are somewhat evenly curved; the front angles are prominent but not acute, the hind angles nearly rounded off. A bunch of long hairs projects over the scutellum and a fringe of similar hairs reaches out backward from the base of the

pygidium. The sculpture of the elytra varies, being almost obsolete in some specimens, but it is never strong; the punctures in the rows are shallow, a little transverse, and not close. The club of the antennæ is nearly twice as long as the entire head, and is nearly parallel sided, and about four times as long as wide. The legs resemble those of *Corynophyllus*.

I have received from Mr. East two specimens taken at Mallala and there are several examples in the South Australian Museum — one of which is ticketed "*Corynophyllus calvus*," but the name does not appear to have been published.

SEMANOPTERUS.

No Australian genus of *Dynastidæ* presents greater difficulty than this, for the descriptions of the three species on which the Rev. F. W. Hope founded the genus are too short and vague to be of much use. I have succeeded, however, in identifying one with some certainty, and I subjoin a detailed description of it, adding descriptions of two more which are certainly new.

S. Subæqualis, Hope. Sat convexus; nitidus; obscure brunneus; capite crasse transversim rugato, cornu conico brevi armato; prothorace canaliculato (canaliculâ crasse punctulatâ), antice transversim rugato, postice subtiliter punctulato; elytris vix costatis sparsim punctulatis. Long. 11—13 l.; lat. 6—6½ l.

The length of the horn varies, but never exceeds that of the basal joint of the antennæ. The prothorax is decidedly more than half again as wide as down the middle it is long; it is nearly twice as wide at the base as across the front margin; its sides and hind angles are rounded, its front angles sharp; its impression occupies its front half (in the male) or third part (in the female), this portion of the segment being strongly declivous; the puncturation of the longitudinal channel is confined to the broad hinder part. The elytra are distinctly at their widest behind the middle; their sutural, external and apical parts are confusedly, finely and sparingly punctured (in some examples this puncturation is almost obliterated); the disc is occupied by about six rows of fine, and not close, punctures (in some examples very obscure), the first, third, and fifth interstices between which are quite smooth and scarcely or not at all convex, the second and fourth interstices being quite level, and confusedly and very sparingly punctured. The scutellum is coarsely punctulate about the base (and in some examples in the middle). In both sexes the antennæ are short with the club shorter than the preceding joints taken together, and the anterior tibiæ are strongly but rather bluntly triden-

tate on their outer margin. The underside and legs are much clothed with rather long ferruginous hairs.

In the male the pygidium is glabrous, shining, and impunctate, except about the sides and base, while the apical ventral segment is widely and roundly emarginate at its apex; in the female the former is closely rugose over its whole surface, and is clothed with reddish pubescence, while the latter is evenly rounded off behind.

The absence of elytral costæ seems in itself sufficient to distinguish this from all the other described species attributed to the genus except *S. convexiusculus*, Macl. in which, however, the elytra are said to be "strongly striato-punctate."

The maxillæ have the intermediate tooth deeply bifid, and the basal one feebly trifid.

I have received two examples (taken in Sedan) from Mr. Rothe; there are also two in the South Australian Museum.

S. angustatus, sp. nov. Sat convexus; nitidus; obscure brunneus; capite, prothorace, pedibus, et abdomine postice (nonnullis exemplis) plus minusve piceis vel nigris, capite transversim rugato, tuberculo conico armato, prothorace canaliculato punctulato; elytris vix costatis sparsim punctulatis. Long. $8\frac{1}{4}$ l.; lat. 4 l.

The protuberance on the head is no more than a smooth conical tubercle; in other respects the head resembles that of the preceding, being rather evenly narrowed from just in front of the eyes to the apex, where it is truncated with a perpendicularly thickened front and somewhat elevated margin. The prothorax is scarcely more than half again as wide as down the middle it is long, and its base is about half again as wide as the front margin; its sides are rounded, its surface rather sparingly and very finely punctured, the puncturation, however, becoming large and coarse in the longitudinal channel, which is wide behind, punctureless, and almost interrupted at the middle, and in the front becomes in the male a large round concavity, in the female a vague wide depression (this is very likely not to be a reliable sexual character); the front part of the prothorax is not conspicuously declivous (as it is in the preceding species); the front angles are sharp, the hinder obtuse, and preceded by a short, gentle sinuosity of the lateral margin. The scutellum is sparingly and coarsely punctured. The sculpture of the elytra consists of a strong, scarcely punctured sutural stria, followed by a smooth space, on which are a few punctures near the base, then a row of fine punctures reaching two-thirds down the elytron, then a smooth scarcely convex space (slightly punctured near the base in one example), then a row of punctures similar to the first row (or a little shorter),

then a space sparsely punctured in front and followed by a third short row of punctures, beyond which are three rows of punctures, the first very short, the external two nearly as long as that nearest the suture; outside these rows a wide marginal space is finely, obscurely, and sparingly punctulate; the extreme apex of the elytra is rather strongly and closely punctured. The pygidium bears some long hairs, and is rather finely and closely wrinkled all over in both sexes.

The underside is much clothed with long reddish hairs. In both sexes the basal five ventral segments have a little close and rugose puncturation on the sides, and also a transverse row of punctures running out from the sides towards (but not reaching) the middle, which is smooth. In the male the apical segment is a little shorter than the penultimate, is very widely and scarcely noticeably emarginate at the apex and is finely wrinkled about its base, the apical portion being smooth and separated from the wrinkled part by a transverse deeply impressed sinuous line which runs from side to side; in the female the apical segment is rounded behind, and is evenly and coarsely wrinkled, hardly punctulate. The legs are like those of *S. subæqualis*.

The maxillæ, like those of the preceding species, have three strong teeth, of which the intermediate is deeply bifid, and the basal feebly trifid.

The convex parallel form of this insect is suggestive at the first glance of a female *Isodon*, but the tubercle on the head of both sexes, the strongly punctured prothoracic channel, the mentum strongly emarginate in front with the insertion of the labial palpi invisible from above, and other characters are clearly those of *Semanopterus*.

Two specimens were taken by Mr. East at Mallala.

S. minor, sp. nov. Brevis; minus parallelus; sat convexus; nitidissimus; piceus; capite transversim rugato, tuberculo conico armato; prothorace canaliculato punctulato; elytris antice fortiter oblique costatis, interstitiis subtriseriatim punctulatis. Long. 8—8½ l., lat. 4—4¼ l.

The colour varies from nearly black to reddish pitchy, the underside and femora especially inclining to a reddish colour. The head does not differ much from that of the preceding; the clypeus is truncate in front, its anterior edge being a little raised, in such fashion that while the truncation is very noticeable if the clypeus be viewed from a point perpendicularly above its surface, from a point behind that (say perpendicularly above the scutellum) the eye catches the raised margin and the clypeus appears rounded in front, while viewed from in front of the head the outline of the whole clypeus appears

to be a continuous tri-sinuate curve, two of the sinuations being formed by the elevated edges of the oblique lateral margins of the clypeus; this clypeal structure is common to all the species known to me of the genus, though in varying proportions, the elevated margin of the clypeus being strongest in *S. lævis*. The prothorax closely resembles that of *S. angustatus*, but the distinctness of the puncturation varies to some extent, as also the size of the anterior impression which does not appear to depend on sex. On the disc of each elytron there are two strong smooth, wide, and rounded costæ which commence a little behind the front and run rather obliquely towards the suture, but fail altogether a little behind the middle of the elytron, and outside these is a third costa, similar in form but much feebler; between the sutural stria and the first costa, and between the first and second, and second and third costæ, there is strong puncturation which runs, more or less irregularly, in three rows; outside the feeble external costa the puncturation is fine, confused, and rather sparing, and this system of sculpture is continued widely round the apex, there being a space almost smooth between the apical end of the costæ with their intermediate rows of punctures and the apical confused puncturation, which space is bounded laterally by the suture and the confusedly punctured marginal space. The pygidium, underside, and legs do not seem to differ noticeably from the same parts in *S. angustatus*. In all the species known to me of the genus it is an occasional thing to find on one or more of the second, third, and fourth ventral segments (not always on the middle line) a short longitudinal impression. In this species it is scarcely ever absent, and is nearly always very strong and sharply defined; in the other species it is generally absent, and when present is quite feeble.

S. minor differs, *inter alia*, from all Mr. Hope's species in being very much smaller, from *S. depressiusculus*, Macl., in not having four costæ on each elytron, from *S. convexiusculus*, Macl., in not having the elytra "strongly striato-punctate," and from *S. lævis* and *angustatus* in having well defined costæ on the elytra. It is a shorter and less parallel species than *S. angustatus*. Its maxillæ are similar to those of the last-named species.

I have taken this insect near Port Lincoln, and have seen specimens from Kangaroo Island (taken by Mr. Tepper) and from the neighbourhood of Sedan (taken by Mr. Rothe).

BUPRESTIDÆ.

MELOBASIS.

M. Andersoni, sp. nov. Lata; sat nitida; ænea; nonnullis exemplis elytris versus latera plus minusve cupreis; subtus

ænea vel cuprea, antennis tarsisque cyaneis vel nigro-cyaneis; capite plano confertim sat fortiter punctulato longitudinaliter rugato; prothorace quam longiori paullo plus dimidio latiori, postice quam antice paullo plus quartâ parte latiori, fortiter sat crebre (præsertim ad latera) punctulato, a basi ad apicem arcuatim angustato, margine antico leviter emarginato, margine basali vix bisinuato; elytris pone medium leviter dilatatis, sat fortiter striatis, interstitiis convexis sparsissime punctulatis, striis sat crebre subtilius punctulatis versus latera et apicem obsoletis, spatio laterali crebre subtilius punctulato transversim rugato, lateribus pone medium serratis; pro et metasternis disco sparsim subtilius, versus latera crebre crasse, punctulatis, illo antice transversim fortiter declivi; abdomine disco antice sparsim, ad latera apicemque crebre, squamose punctulato. Long. $5\frac{3}{5}$—$7\frac{1}{5}$ l.

I know no species previously described bearing much resemblance to this. The six raised interstices between the striæ on the elytra and the wide space outside them free from distinct striation and transversely wrinkled, together are sufficient to characterise the insect. The external non-striate space is in some specimens a little copper coloured. The apical segment of the hind body is of the structure usual in *Melobasis*.

I owe my type to the liberality of Mr. J. Anderson, who captured it near Port Lincoln. There are two specimens in the South Australian Museum, and I have seen a fourth taken by Mr. Rothe, near Sedan. In the last-mentioned example the curve of the apical portion of the lateral margins of the elytra is somewhat sinuate.

M. semistriata, sp. nov. Sat lata; nitida; ænea vel cupreo-ænea, capite prothoraceque viridibus vel obscure cupreis; subtus cuprea, pedibus anticis antice, antennis, tarsisque plus minusve viridibus; capite plano confertim punctulato; prothorace quam longiori paullo plus dimidio latiori, postice quam antice quintâ parte latiori, fortiter sat crebre (ad latera etiam fortius subconfluenter) punctulato, lateribus sat rotundatis; margine antico sat fortiter postico vix evidenter bisinuato; elytris pone medium leviter dilatatis, apice acuminatis, sparsim subtilius (latera transversim rugata versus, crebrius) punctulatis, in parte media punctato-striatis, suturâ (basi exceptâ) et interstitiis convexis, lateribus pone medium serratis; subtus obscure albido-pilosa, prosterno antice vix transversim declivi, medio sat sparsim crassius nec fortiter, metasterno medio sparsissime subtiliter, abdomine sparsim squamose, punctulatis.

This is an obscure looking insect; its affinity seems to be with *M. Andersoni*, from which it differs in having the thorax less narrowed in front and pretty strongly rounded on the sides, the elytra rather sharply pointed at their apex, and the front of the prosternum scarcely bent over or depressed, but very nearly continuing the plane of the general surface of that segment. It differs from *M. Andersoni* (and from other allies) also in the sculpture of the elytra which is as follows:—the suture is well elevated from a little behind the scutellum; next to this there is a flat sparingly and confusedly punctured space, outside which follows a punctate striate region containing (though they are not very well defined) five striæ, the four intervals between which are convex. The external one of the raised intervals is very obscure, the first and third are the longest; they are all wide and only *slightly* convex in front, becoming narrower and more strongly elevated behind. Between the 5th of the punctate striæ and the lateral margin is a space (about twice the width of that between the suture and the first stria) on which the puncturation is tolerably close, and is obscurely confluent transversely.

There are two specimens in the South Australian Museum, which, however, are devoid of any record of capture.

M. Rothei, sp. nov. Sat lata; minus nitida, ænea, cupreomicans; pedibus anticis antice tarsis omnibus et antennis viridibus; capite sat fortiter minus crebre punctulato; prothorace quam longiori plus dimidio (ut 5 ad 3) latiori, postice quam antice fere dimidio latiori, subtilius sat crebre (latera versus crassius) punctulato, a basi ad apicem arcuatim angustato, margine antico bisinuatim emarginato, margine basali vix bisinuato; elytris pone medium leviter dilatatis, subtilius minus crebre (latera versus crebrius, punctis transversim confluentibus) punctulatis, vix evidenter striatis, interstitiis vix evidenter convexis, lateribus pone medium sat fortiter serratis; prosterno minus crebre, metasterno sparsim, subtilius in medio punctulatis, illo antice haud declivi; abdomine squamose minus crebre punctulato. Long. 6 l.

The affinity of this species seems to be with *M. Andersoni*, from which it differs in being narrower and more parallel, and much more finely punctured on the upper surface, with the prosternum a little elevated across its front margin instead of being declivous. The elytra are scarcely striated, with the suture not at all strongly raised behind. Not far from the suture there is an obscurely elevated ridge traceable nearly from the base to the apex in about the position of the second interstice in *M. Andersoni*; within it in front, and outside it

behind, there are obscure traces of raised interstices between the scarcely indicated striæ. The peculiar form of the thorax distinguishes this insect from all other species that bear any resemblance to it.

I possess a single specimen taken near Sedan by Mr. Röthe and generously presented to me.

M. soror sp. nov. Oblongo-ovalis; subnitida; ænea velnigro-ænea, apicem versus nonnullis exemplis obscure cuprea; subtus cupreo-ænea, tibiis anticis tarsisque viridibus; capite plano sat fortiter punctulato, capillis longis albidis confertim obsito; prothorace quam longiori fere duplo latiori, antice quam postice minime angustiori, sat fortiter sat crebre punctulato, ad latera longe albido-pubescenti transversim rugato, antice bisinuato, basi rectilineari, lateribus fortiter rotundatis basi subparallelis; elytris pone medium leviter dilatatis haud striatis, squamose nec crebre punctulatis, punctis antice et latera versus transversim confluentibus, suturâ et lineis duabus (externâ subobsoletâ) pone medium leviter elevatis, lateribus pone medium serratis: subtus longe albido-pubescens, prosterno antice transversim declivi, medio sat crebre fortius, metasterno medio sparsim fortius, abdomine sparsius squamose punctulatis. Long $5\frac{3}{5}$—7 l.

An obscure looking insect somewhat allied to *M. nervosa*, Boisd. Its characteristic features seem to be—on the upper surface a strongly transverse thorax, which is strongly rounded on the sides (the curve ending just before the base and the sides then being straight), and is not much narrowed in front; and elytra without any distinct striation, but bearing each a fairly defined convex ridge about where the second interstice might be expected if the elytra were striated (which, however, is scarcely raised above the surface in the anterior half, and does not reach the apex), some faint indication of a second ridge very much abbreviated at both ends about where the fourth interstice should be, and the suture pretty strongly raised in its posterior half; and on the under surface an obscure coppery gloss (especially about the hinder part of the abdominal segments) together with a prosternum gently and shortly bent over or depressed along its anterior margin. In some species (*B. nervosa* for instance) the prosternum has its front margin quite in the plane of its surface, or even very slightly raised. The pubescence is very similar to that of *B. nervosa*.

I have received this insect from Mr. Rothe, of Sedan, and there are several specimens in the South Australian Museum devoid of any record of capture,

Melobasis sordida, Blackb.=*M. obscura*, Saund (E.M.M., Dec. 1876). This change of name appears to be necessary, as the name *obscura* was applied by Hon. W. Macleay to another species of the genus in 1872. The insect is evidently a common one in South Australia; I have many specimens before me from Adelaide and Port Lincoln districts; like others of its genus it varies greatly in size (from 4 l. to 6 l.), and in colour from an unicolorous coppery tint (with only the front of the anterior legs greenish and the apex of the tarsi blue) to coppery, with the head, front half of the underside and front of all the legs bright green.

M. cupreo-vittata, Saund. There is a nice series of this species in the South Australian Museum. The size varies from 6 l. to 9 l., the ground colour of the upper surface from fuscous to a bright copper color, and the spots and vittæ on the elytra are more frequently bright green than coppery. The structure of the apical ventral segment is very peculiar. In one sex the excavation (usual in the genus) is extremely wide and deep, and the anterior part of its margin is produced backwards in a kind of tooth, so that the segment appears to be tridentate apically; in the other sex the incision is narrow, deep, and with the anterior part of its margin rounded, and there is a small notch on either side of the lateral margin of the segment just before the apex.

M. Meyricki, sp. nov. Sat angusta, postice acuminata; sat nitida; æneo-viridis, prothorace subaurato; elytrorum sutura postice anguste, margine laterali postice late, et apice, splendide purpureis; pedibus anticis antice, antennisque, læte viridibus; capite ruguloso-punctulato, capillis longis albis crebre instructo; prothorace quam longiore dimidio latiore, antice minus fortiter angustato, basi vix bisinuato, longe pubescenti, fortiter sat crebre punctulato, punctis ad latera crassioribus, margine anteriori bisinuato, marginibus lateralibus antice leviter rotundatis, postice sub-parallelis; elytris disco antice sat fortiter minuscrebre sublineatim, ad latera apicemque subtilius crebrius confuse, punctatis, postice minus fortiter denticulatis; suturâ postice elevatâ, regione suturali postice depressâ subtilius punctulatâ; corpore subtus pedibusque longe albido-pubescentibus, illo fortiter sat crebre (abdominis segmentis ultimis 4 subtilius) punctulato. Long. $6\frac{2}{5}$ l., lat. $2\frac{1}{10}$ l.

This large and beautiful species is very distinct from any other previously described; its narrow elongate form strongly pointed behind, and the margins of the elytra scarcely denticulate except round the extreme apex, are conspicuous characters. It should be noted that the anterior margin of

the thorax is not much narrower than the base (as $3\frac{3}{4}$ to $4\frac{3}{4}$) and that the puncturation of the elytra has a tendency about the sides and near the apex to become confluent in a transverse manner. The elytra exhibit in different lights various shades of brassy and pure green color.

A single specimen was sent to me from Western Australia by E. Meyrick, Esq.

M. puncticollis, sp. nov. Angusta, sat elongata; sat nitida; viridis; prothorace utrinque cupreo notato; elytris vittâ latâ irregulari cupreo-micante a basi mediâ ad apicem attingente, alterâ marginali, ornatis; vittâ interiori suturam attingente multo ante medium elytrorum, hâc vittâque exterâ ad apicem late conjunctis; subtus longe albido-pilosa; capite crebre fortiter punctulato punctis longitudinaliter confluentibus; prothorace quam longiori paulo plus dimidio latiori, postice quam antice quartâ parte latiori, crebre fortiter (ad latera crasse etiam crebrius) punctulato, antice et postice sat evidenter bisinuato, lateribus antice leviter arcuatis postice fere parallelis; scutello elongato viridi; elytris pone medium haud dilatatis, apicem versus sat fortiter angustatis, suturam versus sparsim subtilius (latera versus crebrius, fortius, transversim confluenter) punctulatis, vix evidenter striatis, suturâ pone medium et interstitio secundo sat fortiter convexis, lateribus pone medium subtilissime serratis; prosterno antice ciliato haud declivi; hoc metasternoque in medio crebre fortiter, abdomine crasse squamose, punctulatis. Long. $4\frac{3}{5}$ l.

Allied to *M. verna*, Hope. The ruddy coppery markings on the thorax and elytra distinguish it at once, but as I have seen only a single specimen I cannot say that these may not be very variable; the green colour of the scutellum and underside also distinguish it from all the examples I have seen of *M. verna*. Structurally it differs from that species as follows:—It is an evidently narrower and more elongate insect, the disc of the thorax is much more finely, closely, and deeply punctured; the scutellum is elongate, the surface of the elytra has even less trace of striation than in *M. verna*, and bears a well-defined costa (not far from the suture) which can be clearly traced almost from the base very nearly to the apex, and also an elongate convexity between it and the suture extending from the base for about a quarter the length of the elytra. On the under side the hind body is much more finely, closely, and obscurely punctured, and (unless the specimen I have described is abraded) much less pilose.

The coppery markings of the upper surface consist of—On

the thorax a large elongate patch reaching forward from the base on either side of the central line; on the elytra a wide irregular vitta commencing at the base a little outside the scutellum, proceeding obliquely till it reaches the suture about a quarter the length of the elytra from the scutellum, and thence continuing down the suture to the apex, where it joins another wide band of the same colour, which runs the whole length of the lateral margin.

There is a single specimen in the South Australian Museum, but no record exists of its capture.

Melobasis suaveola, Germ., is certainly, I think, the same insect as *M. verna*, Hope, and if I am right in this opinion the former name must be dropped, as Hope's is anterior to it by two years. Germar's statement that the thorax is nearly twice as wide as long was probably not founded on measurement, and is a little exaggerated, the actual proportion being as $6\frac{1}{2}$ to 4. It is a common insect in the Adelaide district, and I have taken it near Port Lincoln. It varies in size from $3\frac{1}{2}$ l. to 6 l., and in colour from green to coppery, with all intermediate shades and mixtures; but the extreme lateral and sutural margins and the scutellum are always coppery, and the under side rarely varies from bright coppery with long sparse white pubescence. The puncturation of the thorax is sometimes more or less obsolete on the disc.

M. propinqua, Hope. This is said by Mr. E. Saunders (Trans. Ent. Soc., 1868) to be identical with *M. Porteri*, Hope. As Mr. Saunders had made a personal examination of the types I have little doubt of the correctness of this determination. At the same time I incline to the opinion that there are several distinct species very closely allied to *M. propinqua*, although I am not at present able to characterise any of them confidently. One obstacle to doing so is the want of a really satisfactory description of Hope's insect, even Mr. Saunders having omitted to mention such important characters as the nature of the striation of the elytra. In the South Australian Museum there is a specimen (its identification I have not attained with absolute certainty, but from its position in the cabinet I am tolerably sure of it) which some M.S. notes assert to have been named *M. propinqua* by Mr. G. R. Waterhouse; and however that may be, I think it probably *is* that species. There are also in the Museum specimens which I cannot satisfactorily separate from it, and I have in my own collection others, perhaps identical specifically, taken near Port Lincoln. Examining the series thus constituted I find wide variety in size and some slight difference in the shape and sculpture of the thorax which suggest the idea mentioned above of several very closely allied insects, but they all agree in possessing the

following characters, viz.:—On the upper side a prothorax not very strongly transverse (*i.e.*, quite evidently less than twice as wide as long), with puncturation more or less strong and scanty (as compared with that usual in the genus), and sides diverging from the front with an extremely slight curve to quite behind the middle, and then continued nearly parallel to the base; elytra coarsely and strongly punctured and transversely wrinkled near the sides, having the disc rather distinctly striated, the second and fourth (in a less degree) interstices, together with the suture, rather conspicuously convex, the convexity of all of them failing, however, in the anterior quarter (or third) of the elytra, and that of the second and fourth interstices failing also near the apex; surface very shining, colour various combinations of coppery and green, the former colour generally predominating about the hinder part of the lateral margins and apex of the elytra; on the under side the prosternum and metasternum finely and sparingly punctured on the median line, hind body sparingly but more coarsely punctured.

M. rotundicollis, sp. nov. Oblongo-ovalis; capite cupreo vel viridi; prothorace et elytris cyaneo, violaceo cupreo viridique obscure micantibus, his plerisque exemplis læte trans basin anguste rubro-violaceis, nonnullis, rubro-marginatis; subtus cuprea vel viridis, vel antice viridis postice cuprea, antennis pedibusque concoloribus; capite plano confertim fortius punctulato; prothorace quam longiori fere duplo latiori, postice quam antice tertiâ parte latiori, punctulato (in disco sparsim subtilius, ad latera crebre fortiter, hic punctis transversim confluentibus), lateribus fortiter rotundatis, margine anteriori sat evidenter, basi vix, bisinuatis; elytris pone medium leviter dilatatis, obsolete striatis; striis seriatim, interstitiis prope suturam sparsissime versus latera confertim transversim punctulatis; suturâ, et interstitio 2°, postice subcostatis; regione suturali postice concavo; margine laterali postice serrato; subtus prosterno crebre subtilius, metasterno sparsim sat fortiter, abdomine sparsim squamose, punctulatis. Long. $3\frac{3}{5}$—$4\frac{4}{5}$ l.

Although this species is not uncommon, and is widely distributed in South Australia, it does not appear to have been named hitherto. It varies in respect of colour, on the upper surface from entirely coppery to almost entirely blue with all intermediate mixtures of those two colours. In all the specimens I have seen, however, when two colours are present on the underside they are green in front and copper colour on the hinder part, and in nearly all that I have seen there is a quite conspicuous narrow transverse border of a rather bright car-

mine colour across the anterior margin of the elytra, often interrupted by a blue scutellum. The carmine (rather than coppery) tint of the iridescence, which the whole upper surface displays in certain lights, the strongly rounded lateral margins of the thorax, perfectly straight anterior margins of the elytra, and the strong elevation behind of the second elytral interstice (no other interstice being distinctly elevated, the fourth is feebly so in some specimens) are all characteristic features. It should also be noted that the punctures on the disc of the thorax are not round but somewhat elongated transversely, although some specimens have the disc of the thorax more roughly punctured, and in these the individual punctures hardly display this character distinctly, but there is a tendency to transverse wrinkling; probably this difference in the thoracic puncturation is sexual.

I have seen many specimens from Port Lincoln and the Adelaide district.

M. vittata, sp. nov. Oblongo-ovalis; sat nitida; capite cupreo vel viridi; prothorace viridi cupreo-notato; scutello viridi; elytris cupreis viridi-bivittatis (vittâ alterâ communi suturali basali, alterâ discoidali a callo humerali productâ in parte apicali quartâ elytrorum deficiente); subtus viridis vel cuprea vel cuprea viridi-micans, pedibus concoloribus; capite plano crebre fortius punctulato, punctis rugis confuse conjunctis; prothorace quam longiori plus dimidio (ut $3\frac{1}{2}$ ad 2) latiori, postice quam antice fere tertiâ parte latiori subtilius crebre punctulato (latera versus transversim rugatis etiam crebrius punctulato), lateribus leviter arcuatis, margine antico evidenter, basali vix, bisinuato; elytris pone medium leviter dilatatis, vix evidenter striatis, subtilius crebre punctulatis (latera versus transversim rugatis, etiam crebrius punctulatis), suturâ pone medium et interstitio 2° (parte basali exceptâ) elevatis, lateribus pone medium serratis; subtus in medio sparsim subtiliter, ad latera crebrius crassius, punctulata. Long. $4\frac{2}{5}$—$4\frac{3}{5}$ l.

The markings of this species render it incapable of confusion with any other. I think its affinity is with *M. rotundicollis* mihi, and *M. intricata*, mihi, especially the latter, from which, however, it differs (independently of the totally different markings) in the slighter curve of the sides of the prothorax, the much feebler and more sparing puncturation of the underside (especially the prosternum) on the median line, &c. The cupreous clouding of the thorax seems to vary. In one specimen that I have before me it consists of a faint longitudinal spot on either side, in another it suffuses the whole surface except on a portion of the median line. The prothoracic

puncturation resembles that of *M. rotundicollis*, the punctures in some specimens being like rather fine transverse scratches and in others considerably coarser and not distinctly transverse.

I have taken an example of this species near Port Lincoln, and there are two specimens in the South Australian Museum, of which the particulars of capture are not known.

M. intricata, sp. nov. Oblongo-ovalis; viridis aureo-micans, prothorace elytrisque purpureo-notatis, antennis tarsisque obscuris; capite leviter convexo, confertim sat fortiter punctulato, prothorace quam longiori fere duplo latiori, postice quam antice paullo plus quartâ parte latiori, sat fortiter nec crebre (ad latera confertim) punctulato, disco utrinque purpureo-maculato, lateribus leviter arcuatis, margine anteriori fortius basi vix evidenter bisinuatis; elytris disco sparsim ad latera crebre punctulatis, obscure striatis, perplexe [utrinque antice vittis 2 ante medium conjunctis, suturâ (parte anteriori quartâ exceptâ), fasciâ post medium et margine laterali postice] purpureo-notatis, sutura et inter-stitio 2° pone medium elevatis, marginibus lateralibus postice sat fortiter serratis; subtus antice sat fortiter postice squamose punctulata. Long. 4—4⅕ l.; lat. 1⅗—2 l.

Var. a. Cyanea, purpureo-notata.
Var. b. Cyanea, maculis purpureis fere obsoletis.
Var. c. Cyanea vel viridis maculis plus minusve aureis.

With a long series of specimens before me of this insect I find much variety in respect of colour and size, but little in any other respect except that in some examples the thorax appears to be somewhat more strongly rounded laterally than in others. A description in English will be desirable of the markings, as it is difficult to describe them accurately in Latin, and I do not find the slightest essential variableness in their shape, although there is much in their color and intensity. They are as follows:—On either side of the central line of the thorax a wide longitudinal vitta touching the base, but not quite touching the anterior margin and extending laterally nearly half way to the margin (in specimens where the thorax is bluish this is often very obscure, the ground colour being nearly the same as that of the vitta); on the elytra an oblique vitta commencing on the shoulder just within the base and running in the direction of the apex of the suture for about one-third the length of the elytron where it becomes wider and turns transversely towards the suture which it touches; between it and the suture there is another wider straight vitta which starts from the base and joins the other vitta in its transverse portion; the

extreme edge of the elytra is concolorous with these vittæ, so that the basal part of the two elytra is traversed longitudinally by six purple or golden stripes alternated with five stripes of the ground colour, all the purple stripes merging into a wide concolorous fascia the hinder edge of which is at about the middle of the elytra, but which does not nearly touch the lateral margins; from this fascia its colour is broadly continued along the suture to the apex, where it meets an equally broad vitta which commences about the middle of the elytron on the lateral margin and follows the margin to the apex; just behind its commencement the lateral vitta is connected with the sutural one by a wide transverse fascia, so that in the hinder half of each elytron the ground colour exists only as a rather small spot surrounded by the posterior fascia (in front) and the sutural and lateral vittæ (on the sides and behind). The extreme anterior margin also is purple or golden. In some specimens the ground colour is so nearly the same as that of the markings that the latter are difficult to trace except side by side with a well marked specimen. This insect is rather close to *M. superba*, L. and C., but is much smaller (the largest specimen I have seen being less than 5 l. against 7 l., the length of *M. superba*). There are colour differences also (*e. g.* the scutellum being always of the ground colour), and the markings are different, especially in respect of the anterior fascia of the elytra not nearly reaching the lateral margins. The thorax is less narrowed in front, and has no *raised* dorsal line, but in some examples faint traces of an impressed one, and the elytra are swollen out, and at their widest just behind the middle. The pattern of the front half of the elytra scarcely differs from the same in *M. pyritosa*, Hope. but the hinder half is very differently marked, the outline of the elytra is rounded, and blunt behind, &c., &c.

There are a number of specimens of this insect in the South Australian Museum, but there is no record of their locality. It has been taken near Port Lincoln by my friend, Mr. J. Anderson.

M. pretiosa, sp. nov. Lata; viridis, prothorace elytrisque purpureo-notatis, notis aureo vel cupreo marginatis; capite crebre sat fortiter punctulato; prothorace quam longiori fere duplo (ut $4\frac{1}{2}$ ad $2\frac{1}{2}$) latiori, antice quam postice paullo (ut $3\frac{3}{4}$ ad $4\frac{1}{2}$) angustiori, sat fortiter punctulato (disco sparsim, ad latera crebre, his transversim rugatis), disco obscure cupreo-umbrato, lateribus leviter arcuatis, margine anteriori leviter basi vix evidenter bisinuatis, angulis posticis acutis; elytris leviter striatis sat crebre punctulatis, punctis in parte transversim confluentibus; sutura (basi exceptâ), margine laterali (antice peranguste postice

sat late), fasciâ latâ ante medium, fasciâ angustiori post medium, et apicem, purpureis aureo vel cupreo marginatis, lateribus postice sat fortiter serratis; subtus antice fortiter postice sat subtiliter punctulata, abdominis segmento ultimo apice obscuro. Long. $5\frac{3}{5}$—6 l.

Var. Colore plus minusve aurato.

This insect appears to be distinct from any previously described. It is considerably smaller than *M. superba*, with the markings different, and the thorax much less contracted in front, &c., &c. The anterior elytral fascia is of rather peculiar form, being of a somewhat circular shape on each elytron, and its curve scarcely quite touches either the suture or the lateral margin; its front edge is quite clear of the base of the elytra.

The South Australian Museum contains two specimens of this insect; one of them has no record of capture, the other was taken by Mr. Tepper, at Dimboola, Victoria.

N.B.—There is a specimen in the South Australian Museum with markings, colours, and puncturation so absolutely identical with the above that I hesitate to treat it as a distinct species, although it is considerably smaller and narrower, and has the thorax much more strongly contracted in front. It is labelled as taken at Gawler.

M. speciosa, sp. nov. Sat angusta; capite prothoraceque aureo-viridibus, elytris auratis vel viridibus purpureo vel cyaneo notatis; subtus cyanea, abdominis segmento ultimo cupreo, antennis tarsisque obscuris; capite leviter convexo, crebre fortius punctulato, punctis rugis obscure conjunctis; prothorace quam longiori plus dimidio (ut $2\frac{1}{2}$ ad $1\frac{1}{2}$) latiori, antice quam postice paullo (ut 2 ad $2\frac{1}{3}$) angustiori, disco sparsim subtilius ad latera fortius crebre punctulato, his transversim rugatis, nonnullis exemplis lineâ dorsali lævi, lateribus sat fortiter rotundatis, margine anteriori et basali leviter bisinuatis, angulis posticis acutis; elytris obsolete striatis, punctulatis (prope mediam suturam sparsim, ceteris partibus sat crebre), ad latera transversim rugatis; margine laterali postice, suturâ (basi exceptâ), maculâ ante mediam partem (suturæ conjunctâ), fasciâ pone medium et apice purpureis vel cyaneis; lateribus postice sat fortiter serratis; subtus antice subtilius, postice squamose, sparsim punctulata. Long. $2\frac{3}{5}$—$3\frac{2}{5}$ l., lat. 1 (vix)—$1\frac{1}{15}$ l.

Var. *a*. Capite prothoraceque cyaneis.

Var. *b*. Segmento ultimo obscuro vix cupreo.

This seems to be a very distinct species. Its small size and brightly-coloured markings together are almost enough to characterise it. The front of the purple colouring on the suture of the elytra expands into a large spot on either side (somewhat

as in *M. gloriosa*, Hope); the marginal purple colour commences just behind the middle where the fascia meets the margin; the spot of ground colour near the apex enclosed by the purple of the suture, fascia, lateral margin, and apex is moderately large. I have seen a good many specimens of this insect, all those bearing any record of locality having been taken at no great distance from Adelaide. The species does not seem to vary much.

M. semisuturalis, sp. nov. Oblongo-ovalis; sat nitida; læte viridis, elytrorum sutura (tertia parte anticâ exceptâ) et magine laterali summo purpureis; capite plano confertim sat fortiter punctulato; prothorace quam longiori plus dimidio (ut $2\frac{2}{3}$ ad $1\frac{2}{3}$) latiori, postice quam antice paullo plus quartâ parte latiori, crebre subtilius (ad latera crassius) punctulato, antice sat evidenter postice leviter bisinuato, lateribus leviter arcuatis; elytris pone medium leviter dilatatis, obscure striatis (striis suturam lateraque versus deficientibus), crassius confuse punctulatis, punctis præsertim ad latera transversim confluentibus, lateribus pone medium transversim rugatis; prosterno antice declivi; hoc in medio crebre, sat fortiter, metasterno in medio sparsius sat fortiter, abdomine sparsius squamose, punctulatis. Long. $3\frac{2}{5}$ l.

This is a splendid little insect. The green colour of the specimen described is about as full and rich a tint as can be imagined. It should be noted that the interstices of the striæ on the elytra are obscurely convex, the first, third, and fifth very slightly and undecidedly more so than the others.

M. (?) thoracica, sp. nov. Oblongo-ovalis; minus nitida; atro-cyanea; capite prothoracis lateribus, elytrorum margine summo apiceque, et corpore subtus, obscure cupreo micantibus; capite plano confertim fortiter punctulato; prothorace quam longiori dimidio latiori, postice quam antice quartâ parte latiori, crebre fortiter (ad latera etiam crebrius) punctulato, lateribus sat fortiter rotundatis, margine anteriori leviter posteriori fortiter bisinuatis; elytris pone medium leviter dilatatis sat evidenter striatis, sat fortiter punctulatis, punctis suturam versus sparsis, latera versus crebris transversim confluentibus, striis punctulatis ad latera deficientibus, interstitiis planis, lateribus totis (quartâ parte basali exceptâ) subtiliter serratis, margine anteriori fortius obtuse producto; prosterno antice vix declivi; hoc in medio (antice subtilius postice fortiter) crebre punctulato; metasterno in medio sparsius sat fortiter punctulato, spatio utrinque pone medium lævi; abdomine crebre fortiter punctulato. Long. $4\frac{3}{5}$ l.

The strong bisinuation of the base of the prothorax and the evidently produced anterior margins of the elytra in this insect are scarcely consistent with a place in the genus *Melobasis*. There is, however, an approach to similar characters in *M. speciosa*, which certainly belongs to the genus, and the general aspect of *M. thoracia*, structure of the apical segment, &c., are quite of the ordinary type. The lateral serration of the elytra carried nearly to the base and the shining unpunctured space on either side of the metasternum are also very distinctive characters. There is a very distinct impression at the base of each of the intermediate ventral segments on either side.

I have a single specimen in my collection taken by myself in South Australia, but unfortunately I have no exact record of the circumstances of its capture.

EURYBIA.

E. australis, sp. nov. Elongata; cylindrica; ænea, vix cupreotincta; fortiter punctulata; prothorace quam longiori haud latiori; elytris haud conspicue 4-costatis; antennarum articulo quinto sexto simili. Long. 4 1, lat. 1 1.

The head scarcely differs from that of *E. chalcodes*, Hope; the antennæ are a little longer than in that species, the series of dentate joints beginning with the fifth (not as in *E. chalcodes*, with the sixth). The prothorax is, by measurement, equal in length and width, and is scarcely contracted towards the front; in other respects it hardly differs from that of the older species. The elytra, however, are differently sculptured. Outside the two costæ (which are really the alternate interstices of an ill-defined system of punctured striæ) next to the suture, the striæ (at least on the posterior half of the elytra) become defined, and all their interstices are convex, the alternate ones (representing the third and fourth costæ of *E. chalcodes*) being very little more so than the rest; the whole puncturation tends to run in longitudinal lines, and the apex, which is feebly emarginate, has an obscure spine only at the *sutural* edge of the emargination. The general form is narrower and more cylindric than that of *E. chalcodes*, with the elytra less pointed apically.

Several specimens were taken by Mr. J. Anderson and myself about six miles from Port Lincoln.

ANILARA.

This genus was formed by M. Deyrolle for the reception of *Anthaxia Adelaidæ*, Hope. The truncate hind margin of its prothorax, non-spinose apical ventral segment, and basal joint of hind tarsi quite strongly compressed (on its wide face wider

than any other part of the tarsus) are characters which, taken together, will distinguish it from all its Australian allies.

A. Adelaidæ, Hope. I have examples, taken near Adelaide, of an insect which agrees very well with the description of this species. It is the only *Anilara* known to me with an impressed longitudinal line on the vertex. The type must have been a very small specimen ($1\frac{1}{4}$ l.). Those I have seen vary from $1\frac{1}{3}$ l. to 2 l. in length.

A. planifrons. Minus lata; ænea; sat rugose nec profunde punctulata; prothorace fortiter transverso, elytris latiori. Long. $1\frac{1}{6}$ l., lat. $\frac{3}{5}$ l.

This minute *Buprestid* is of a blackish-brassy colour, with the head and prothorax a little coppery. The head is evenly convex, and is covered not very closely with moderately large, round shallow punctures, which seem to be of a dull whitish colour within, as though they contained a small scale or granule, a similar system of puncturation (rather coarser however) extending to the sides of the prothorax, but becoming obsolete towards the disc where the sculpture consists of scratchy wrinkles, the actual centre space being nearly lævigate in most specimens. The prothorax has strongly-rounded sides, and is widest a little behind the middle, where it is wider than the elytra; across the base it is just twice as wide as down the middle it is long, and something less than twice as wide as its front margin; the base is truncate, or rather slightly concave all across, causing the posterior angles to seem a little produced backwards; these latter are acutely rectangular, the anterior angles acute, but not conspicuous, the anterior edge shallowly emarginate. The scutellum is roundly triangular and not very small; the front margin of the elytra does not project forward at all beyond it. The sculpture of these latter is very obscure; near the suture it is sparing puncturation, which is very fine in front and becomes coarser hindward; the lateral portions seem to be very coarsely coriaceous, and without defined punctures. On the underside the sterna are set laterally with large punctures similar in character to those on the head, and are smooth in the middle, while the sculpture of the hind body consists of long fine lines running longitudinally.

The evenly convex head and curiously sculptured hind body will readily distinguish this species from *A. Adelaidæ*, Hope. I cannot discover any distinct thoracic margin in this species; in *A. Adelaidæ* there is a very fine thread-like one which, however, runs entirely on the under surface, but keeps parallel to the edge.

I obtained a few specimens of this insect by beating *Eucalyptus* near Wallaroo.

NEOCURIS.

I have not seen the original diagnosis of this genus by M. Deyrolle, but the characters are mentioned (probably quoted) by M. Fairmaire in the Ann. de la Soc. Ent. de France for 1877. These characters are eminently unsatisfactory. One of them is that the head is more widely and deeply excavated than in *Curis*, and yet M. Fairmaire makes a section in the genus with the head not excavated at all. Another character, the less prominence of the labrum, is extremely variable. There remain (to distinguish it from *Curis*) smaller size, a difference in the shape of the front of the prothorax, and a proportional shortness of the basal joint of the tarsi. Of these the last only appears to me a good distinction. The following characters, however, will distinguish the genus from all other Australian genera of the sub-family, and so enable the Australian collector to recognise it, viz., poriferous depressions of the antennæ terminal (as in *Curis*, *Melobasis*, &c.) ; hind tarsi much shorter than their tibiæ, the basal joint not (or scarcely) so long as the following two together ; head more or less impressed between the eyes ; prothorax bisinuate behind ; apical part of elytra serrulate, simply and separately rounded behind (in all species yet described) ; pygidium concave, exposed ; apical ventral segment evenly rounded off (*i.e.*, not produced into spines at the apex).

The following two descriptions are founded on species that clearly appear to be hitherto undescribed members of this genus. I have before me several others allied to, but probably distinct from, some of those described by M. Fairmaire *(loc. cit.)*, but as M. Fairmaire's descriptions are not precise in respect of the proportional length and breadth of the insects or of their several segments it is impossible to be certain as to their distinctness.

N. Fairmairei, sp. nov. Lata ; cœruleo-nigra, subtus lætius cœrulea ; fortius nec crebre punctulata ; capite sat fortiter impresso ; elytris mox post basin fortiter impressis. Long. 2 l. Lat. 1 l.

A very short, wide, flattish species, even more so than *C. discoflava*, Fairm., the anterior two-thirds of the elytra almost parallel, or rather with sides very slightly concave, the body in front of and behind that part somewhat equally narrowed. The head is a little more transverse than in *N. discoflava*, with the clypeus scarcely so distinctly emarginate in front ; it is moderately channelled longitudinally, the channel being deepest in the middle so as to appear a little foveiform ; the puncturation is a little less close than in *discoflava*, and a little inclined to run into rows. The pro-

thorax at the base is strongly bisinuate, is nearly twice as wide as it is long down the middle and a little more than half again as wide as its front margin; its sides are arcuately narrowed from the base to the apex; its surface is rather strongly convex both longitudinally and transversely, and (as in *N. discoflava*) is coarsely and rather closely, but not deeply, punctured. The elytra are very little convex and are rather finely and rather sparingly punctured, the punctures running in the anterior half entirely in transverse wrinkles and becoming very faint towards the apex; the transverse depression immediately behind the base is wide, strong, and conspicuous, and there are indications of impressions, or unevenness, about the middle. The puncturation of the underside is coarse but shallow, close on the sides, and sparse in the middle.

The unicolorous bluish-black tint of this species would place it in M. Fairmaire's first division of the genus, but its real affinity is certainly with *N. discoflava*, *Fortnumi*, &c.

There is a single specimen in the South Australian Museum taken almost certainly in South Australia.

N. pubescens, sp. nov. Convexiuscula; minus parallela; nigra, obscure cœruleo-tincta; capillis sat longis albidis vestita; fortiter punctulata; elytris vix inæqualibus. Long. 2 l. Lat. $\frac{4}{5}$ l.

The uniform blackish colour is only slightly tinged with blue; the shape resembles that of *N. monochroma*, Fairm., the prothorax, however, being more convex longitudinally. The head is feebly channelled and is covered rather closely with very large and very deep punctures. The prothorax is sculptured a little less coarsely than the head; it is at the base slightly more than half again as wide as down the middle it is long, and only about a quarter as wide again as its front margin; it is slightly and arcuately contracted from the base to the apex. The elytra are gently contracted from the base hindward; their puncturation is close and strong, but not nearly so strong as that of the prothorax; in front and laterally the puncturation has only a moderate tendency to run in transverse wrinkles. The erect, rather long, and moderately close hairs which clothe the whole upper and under surface distinguish the species from all others yet described in the genus.

The sculpture of the underside is coarse.

A single specimen occurred to me on a flowering *Eucalyptus* about 20 miles north of Port Lincoln.

ETHON.

E. maculatus, sp. nov. Latus, antice posticeque angustatus; supra nigro-æneus, albido-maculatus, minus nitidus; subtus æneo-micans, ad latera albido-pubescens; antennis

sat robustis capiti longitudine vix æqualibus; capite longitudinaliter profunde sulcato, crasse rugose nec crebre punctulato; prothorace quam longiore fere duplo latiore, utrinque carinâ flexuosâ a latere remotâ instructo, antice quam postice paullo minus dimidio angustiore, ad basin fortiter lobato, crasse confuse nec crebre rugato, crasse obscure punctulato, lateribus antice paullo rotundatis postice subparallelis, angulis posticis obtusis, margine anteriori concavo in medio leviter rotundato-producto, disco postice late (nonnullis exemplis vix evidenter) canaliculato; elytris obscure striatis, striis carinis minutis confertim instructis; subtus (prosterno crasse fortiter rugato excepto) punctulatus, puncturis antice sat crassis nec crebris postice gradatim subtilioribus crebrioribus notatus. Long. $3\frac{3}{5}$—$4\frac{2}{5}$ l.

This is a very distinct species; the elytra marked with a considerable number of isolated (but not very sharply defined) small patches of whitish pubescence give it a peculiar appearance.

Western Australia; sent to me by E. Meyrick, Esq. Also near Port Lincoln.

NEOSPADES, *gen nov.*

I propose this new generic name for an insect in the South Australian Museum, which is said to be *Corœbus chrysopygius*, Germ., and which, in spite of some slight discrepancies in respect of colour, I have little doubt is that species. It, however, is certainly not a *Corœbus*, the carina within the lateral margin of the thorax on either side being continuous to the anterior margin, and straight (as in *Cisseis*). The tarsi, with strongly compressed joints (those of the posterior legs having the basal joint scarcely longer than the second), distinguish the insect from *Cisseis* and *Ethon*, while the strongly transverse scutellum, sharply pointed behind, and absence of tubercles from the head and thorax, prevent its being placed in *Discoderes*. In respect of the rest of its characters I do not observe any notable difference from *Cisseis*, except that the claws are strongly bifid, and that only joints five to eleven of the antennæ are distinctly dentate. As it is probable that Germar's description of his *Corœbus* is not familiar to South Australian entomologists, the following description of the specimen on which I found this genus may not be out of place.

Minus convexus; sat angustus; nitidus; viridis; elytrorum dimidiâ parte apicali aureo-purpureâ, fasciâ angustâ aureo-viridi notatâ; antennarum articulis 5°-11° serratis; capite sat fortiter canaliculato, crebre fortius punctulato, postice longitudinaliter rugato; prothorace quam longiore fere

duplo latiore, antice minus fortiter angustato fortiter bisinuato, fortiter transversim rugato, postice bisinuato, lateribus rotundatis ; elytris antice fortiter crebre postice sparsius subtilius punctulatis, rugatis, lateribus postice crenulatis; subtus obscure punctatus, reticulatim strigosus. Long. $3\frac{1}{5}$ l.

There are faint indications of pubescent spots on the sides of the abdominal segments, which would possibly be well defined in a fresh specimen.

CISSEIS.

C. nubeculosa, Germ. I have long had a suspicion that this and *M. chalcopterum*, Germ., could not be satisfactorily separated, the latter being distinguished by their author only by size, colour, and the absence of certain impressions from the head and thorax. In the last-named respect *M. nubeculosa* itself varies not a little. The question has, however, been set at rest by Mr. J. G. O. Tepper, who has shown me two specimens taken pairing, one of which is evidently *C. nubeculosa* and the other *C. chalcopterum*. He assures me that he has frequently found the two forms pairing together.

C. obscura, sp. nov. Minus convexa ; ænea ; supra quam subtus multo minus nitida ; abdomine glabro ; elytris obscure aureo pubescentibus postice subcupreis, capite sat crebre fortius punctulato, postice undatim rugato, medio vix evidenter canaliculato ; prothorace vix dimidio latiore quam longiore, antice minus fortiter angustato subtruncato, postice leviter bisinuato, æquali, crebre subtiliter curvatim rugato, lateribus sat rotundatis ; elytris crebre subtiliter rugose punctulatis, lateribus postice subtiliter serratis. Long. 3 l.

This little species resembles *C. notulata*, Germ., and *C. roseocuprea*, Hope. It is a flatter and proportionately wider insect than either of them, and also differs from them both in the perfectly even surface of its thorax, which is entirely devoid of impressions, in the absence of pubescent spots from the abdominal segments, and in the arrangement of the pubescence on the elytra, which is evenly though obscurely spread (giving those organs an appearance of being frosted) saving that there are some denuded spaces forming a vague irregular fascia near the front, a second behind the middle, and a third occupying the apex ; there is no trace at all of the *spots* of pubescence which are present in all the specimens I have examined of the other two species mentioned above. *C. obscura* is also distinguished from them both by the considerably finer and closer puncturation of its elytra, from *C. notulata* by the

very slight concavity of its head, and from *roseocuprea* by the brighter appearance (and the transverse wrinkles on the hinder part) of the same. According to Dr. Germar *C. notulata* has elytral margins devoid of serration, but I do not think that this is a reliable character, as specimens otherwise identical differ from each other in respect of it, and I even possess a specimen in which there is serration on one elytron only. The sculpture of the abdominal segments is also characteristic in *C. obscura*, consisting of fine longitudinal scratches and transverse wrinkles, on a very brilliant surface. It resembles *C. acuducta*, Kirby, in many respects (especially in the arrangement of the pubescence on the elytra), but differs in the absence of impressions from the thorax, smaller size, the very much more finely sculptured under-surface, &c., &c.

Of this species I have seen only a single specimen, which occurred to me near Port Lincoln.

C. parva, sp. nov. Sat convexa; ænea, ad cupreum colore tendens; sat nitida; supra obscure pubescens, subtus glabra; capite sat crebre fortius punctulato, postice curvatim rugato, medio sat fortiter late canaliculato; prothorace quam longiore fere duplo latiore, antice minus fortiter angustato postice leviter bisinuato utrinque bifoveolato, curvatim rugato (in medio leviter, ad latera fortius), lateribus minus rotundatis, margine anteriori sat fortiter rotundatim in medio producto; elytris crebre obscure sat crasse nec fortiter punctulatis, lateribus postice vix evidenter serratis. Long. 2 l.

Var. Colore æneo-viridi, elytris æneo-purpureis.

This very small *Cisseis* is another ally of *C. notulata*, Germ., and *roseocuprea*, from which it may be at once distinguished by the absenae of pubescent spots on the sides of the hind body. From *C. obscura*, mihi, it differs in respect of its much more strongly transverse thorax, which has two wide ill-defined impressions on either side at the base (the outer of which is the feebler of the two), the much coarser (though hardly deeper) puncturation of the elytra and hind body, and the much feebler serration of the hind lateral margin of the elytra. The whitish pubescence on the elytra of the specimen before me is very sparse and obscure (possibly owing to abrasion). It seems, however, to shape itself rather after the fashion of the elytral pubescence in *C. obscura*.

There is a single specimen in the South Australian Museum —locality unknown; also a single specimen of the var. (in a similar plight), which apart from colour differs from the type only in having the external basal impression on the thorax still more feeble, and vaguely connected with the internal one. I

have in my own collection a specimen taken about 30 miles from Port Lincoln.

The following two new species differ rather conspicuously in appearance from the ordinary types of the genus, although I do not observe any defined character that renders a new name necessary. They are broad about the front of the elytra and a good deal narrowed thence both towards the head and towards the apex; they are absolutely devoid of any indication of pubescent spots or fasciæ, and the lateral carina (*i.e.*, that within the lateral margin of the thorax on either side) is widely separated from the margin and strongly curved near the base of the thorax. The tarsi are somewhat more compressed than is usual in the genus, and the basal joint of the hind tarsi, though longer than the second, is distinctly shorter than the second and third together.

C. constricta, sp. nov. Nitida; antice posticeque angustata; breviter æqualiter sparsim pubescens; cyaneo-viridis, elytris purpureo-nigris igneo-cupreo marginatis; capite subplano vix evidenter canaliculato crebre sat fortiter punctulato, punctis rugis longitudinalibus positis; prothorace quam longiore fere duplo latiore, antice leviter rotundato minus angustato, trans basin depresso, obscure squamose punctulato, transversim curvatim nec crebre rugato, lateribus leviter arcuatis parte quintâ posteriori abrupte subrectis, carinâ laterali postice fortiter arcuatâ marginem anteriorem vix attingente, basi leviter bisinuatâ; elytris antice crasse obscure punctulatis transversim crasse rugatis, postice punctis subtilioribus rugis obsoletis; subtus sparsim squamose punctulata, punctis undatim rugis conjunctis; prosterno fortius punctulato. Long. $2\frac{1}{5}$ l.

Owing to the abrupt declivity of the sides of the thorax the curved carina viewed from above seems to form the lateral margin, and this in conjunction with the transversely depressed base of the thorax causes the thorax to appear strongly constricted just in front of the base, the apparent constriction seeming to form on the lateral margins a sharply-defined triangular excision. The fourth joint of the antennæ is equal in length to the third and longer than the fifth; it is slightly produced on the inner side, but much less so than the following joints.

I have a single specimen, which was sent to me from Western Australia by E. Meyrick, Esq.

C. Lindi, sp. nov. Sat nitida; antice posticeque angustata; vix pubescens; cupreo-ænea, antennis (basi excepta) tarsis elytrisque purpureo-nigris, his igneo-cupreo marginatis;

capite subplano vix evidenter canaliculato crebre sat fortiter punctulato, punctis rugis longitudinalibus positis; prothorace quam longiore fere duplo latiore, antice leviter rotundato sat fortiter angustato, utrinque in angulo postico foveolato, obscure squamose punctulato, transversim curvatim nec crebre rugato, lateribus leviter arcuatis parte quintâ posteriori abrupte subrectis, carinâ laterali postice fortiter arcuatâ marginem anteriorem vix attingente, basi leviter bisinuatâ; elytris antice crasse obscure punctulatis, transversim crasse rugatis, postice punctis subtilioribus rugis obsoletis; subtus sparsim squamose punctulata, punctis undatim rugis conjunctis; prosterno fortius punctulato. Long. $2\frac{3}{5}$—3 l.

The resemblance of this species to the preceding is very great. Apart from colour and size the difference seems to be confined to the thorax. In *C. Lindi* the anterior margin is two-thirds the width of the posterior, the surface is even (except that there is a fovea close within the posterior angle on either side), and the lateral margins viewed from above appear to be narrowed from the base to the apex in a bisinuate curve. In *C. constricta* the anterior margin is three-quarters the width of the posterior, there is a conspicuous depression all across the base, and the lateral margins viewed from above have the peculiar outline already described. In both these species the true lateral margin (which cannot be seen from above) is gently arched from the front to near the base, then strongly rounded inwards, and then proceeds in a nearly straight line to the base. This sculpture is best seen from a point of view halfway between perpendicular and lateral. The fourth joint of the antennæ is longer than either the third or the fifth, and is scarcely less produced than the fifth on the inner side.

This is a South Australian species; I have taken it near Port Lincoln, and have also seen specimens taken near Adelaide.

C. occidentalis sp. nov. Sat nitida; oblongo-ovalis; glabra; viridis, cupreo-micans, antennis pedibusque obscuris; capite lato vix concavo anguste canaliculato fortius sat crebre punctulato, punctis rugis longitudinalibus vix evidenter conjunctis; prothorace quam longiore sat minus duplo latiore, antice rotundato minus fortiter angustato, æquali, obscure punctulato, transversim curvatim sat crebre rugato, lateribus vix arcuatis, carinâ laterali sinuatâ marginem anteriorem haud attingente, basi mediâ breviter lobatâ; elytris antice subtilius punctulatis transversim subtilius rugatis, postice obscure punctatis vix rugatis; subtus squamose sat crebre punctulata. Long. $2\frac{3}{5}$ l.

Although this insect has a very ordinary appearance it does

not seem quite at home in any described genus known to me. The apportionment of species in genera is, however, so much better done when species can be treated *en masse* that I prefer avoiding the creation of new genera when possible in such a memoir as this, and I think no great violence is required to place the present insect in *Cisseis* provisionally. It must, nevertheless, be noted that its tarsi and antennæ are not those of a typical *Cisseis*, the former being rather strongly compressed, with the basal joint (on the posterior legs) not much longer than the second, and the latter having the fourth joint scarcely at all produced on the inner side, but almost identical in shape with the third. In both these respects there is an approach to *Corœbus*, but on the other hand the claws are those of a *Cisseis*, and the inner lateral carina of the thorax is traceable nearly to the anterior margin; the structure of the antennæ and of the scutellum (which is that of a *Cisseis*) forbids an association with *Discoderes*, and the structure of the claws as well as the general facies are inconsistent with my new genus *Neospades*. There are undoubtedly large numbers of Australian *Agrilidæ* allied to *Cisseis* still undescribed, and it is likely that as they are brought into notice our ideas of the limits of some genera may be a good deal modified. In some respects *C. constricta* (described above) is intermediate between the present species and a typical *Cisseis*.

I possess a single specimen which was sent to me by E. Meyrick, Esq., from Western Australia.

AGRILUS.

A. Australasiæ, L. and G., and *hypoleucus*, L. and G. The latter of these is quoted as above in Mr. Masters' catalogue, but should be, I think, *hypoleucus*, Hope. The former is stated by Germar to occur near Adelaide (the species he refers to is by no means uncommon in S. Australia), while the latter, under the names *assimilis* and *purpuratus* as well as *hypoleucus* (names which Mr. Masters himself quotes as synonymic) is attributed by the Rev. F. W. Hope to Western Australia, and also is said to have been taken by Mr. Fortnum, of Adelaide, at "Moriatta"—no doubt a mistake for "Morialta." Yet the only locality mentioned by Mr. Masters in the case of each of these insects is "New South Wales." Moreover there is great doubt, I think, as to the real distinctness of *Australasiæ* and *hypoleucus*.

Cisseis cupreicollis, Hope, and *æneicollis*, Hope (said to be a variety of same). These names are stated by their author to be applied to insects sent to him from "Moriatta." The frequent mention of this place by Mr. Hope as a hunting ground of Mr.

Fortnum, of Adelaide, leaves scarcely a doubt that it should be "Morialta."

In Masters' catalogue this insect is attributed to N.S. Wales only.

GERMARICA, *gen. nov.* [Trachydæ].

Aphanistico affinis, sed antennarum clava 7-articulata, capite vix canaliculato, tarsis longioribus, horum articulo quarto valde dilatato.

The insect for which I propose this generic name has quite the appearance of the European *Aphanisticus pusillus*, Herbst., but in spite of this striking resemblance cannot be associated with it, on account of structural differences in the head, antennæ, and tarsi. The head is hardly channelled; the antennæ are not longer than the width of the head, and are very stout, the apical seven joints strongly produced inward, so that these seven joints together form an abrupt club (reminding one of the antennal club of *Syndesus* in the *Lucanidæ*) scarcely more than twice as long as it is wide, and longer than the four joints that precede it together. The tarsi are decidedly, though not very much, longer than those of *Aphanisticus*, their fourth joint much dilated, the claws very small. I do not know the genus *Paracephala*, Thoms., but its name cannot stand, having been previously used for a genus of *Phytophaga*. If Mr. Masters is right in attributing to it *Agrilus pistacinus*, Hope, the insect I am describing has nothing to do with it.

G. casuarinæ, sp. nov. Elongata, nigro-ænea; glabra; prothorace leviter transverso, lateribus haud explanatis; elytris leviter sparsim punctulatis. Long. $1\frac{1}{3}$ l., lat. $\frac{2}{5}$ l.

The whole upper surface is dulled somewhat by a system of very fine close puncturation; over this are sprinkled larger and very faint punctures, which are sparse on the head, much more so on the prothorax, numerous on the anterior half of the elytra, and obsolete behind. The prothorax is about half again as wide at the base as down the middle it is long, and has its sides gently rounded to the front, which is about three quarters of the width of the base; a transverse impression runs immediately in front of the base, which is bisinuate. The elytra are about four times as long as, and not wider than, the prothorax; they are sub-parallel in their anterior two-thirds, and then contracted to the apex. They have no trace of sculpture other than that described above. The under surface is evenly and very finely and closely punctured.

A few specimens were taken by me near Port Lincoln by beating *Casuarina*. There are also two examples, unticketed, in the S. Australian Museum.

MALACODERMIDÆ.

METRIORHYNCHUS.

M. vittatus, sp. nov. (mas). Piceo-niger, elytris (suturâ late piceâ exceptâ) testaceo-fuscis; rostro quam latiore paullo longiore; prothorace 7-areolato; elytris quadricostatis, interstitiis biseriatim cancellato-punctulatis. Long. 5 l.

The antennæ are strongly flabellate; the produced part of joints three to ten is slender, that of three equal in length to the joint, that of four to ten longer than the length of the several joints. The thorax is a little reddish on the sides, which are strongly elevated; its base is strongly trisinuate and its area small (the width across the base scarcely equalling that of one of the elytra at its widest part). The pitchy stripe which runs down the suture occupies its width the whole space between the fourth interstices of the two elytra, and terminates at a distance from the apex about equal to the length of the thorax. The elytra are gently dilated to considerably behind the middle. The pairs of rows of punctures between the costæ on the elytra are separated by distinct lines. The penultimate ventral segment is incised nearly to the base by a parallel-sided incision.

A single specimen occurred to me at Port Lincoln, on flowers.

N.B.—I possess a female, also from Port Lincoln, which I think must be paired with the above-described male, in spite of some structural discrepancies. It is considerably smaller ($3\frac{3}{4}$ l.); the rostrum is shorter, being not quite so long as wide (in the male it is nearly half again as long as wide), and the thorax is less strongly sinuate behind, with the hinder angles much less pronounced. In spite of these differences the specimens agree so perfectly in all other respects—including the very distinctive marking of the elytra—that (taking into account their having been found on the same day and on flowers of the same tree) I do not feel justified in treating them as distinct species. The antennæ, of course, differ in the manner that is usual in the genus.

M. Meyricki, sp. nov. (mas). Niger; elytris (suturâ apiceque nigris exceptis) rufis; rostro nullo; prothorace 7-areolato; elytris basi quadricostatis, costis primâ et tertiâ postice subobsoletis; interstitiis uniseriatim cancellato-punctulatis. Long. 3—$3\frac{1}{2}$ l.

The antennæ are very strongly dentate, each of joints three to ten being a trifle longer than wide, and at its apex (which is not emarginate) about twice as wide as at its base. The seven areolæ of the thorax are very clearly defined; the base of the thorax is rather strongly trisinuate, and the hinder angles quite

sharp. The black marking of the elytra consists of a common vitta, which covers at the base the space between the first costa on the two elytra, and gradually dilates backward till it touches the lateral margins at a distance from the apex about equal to the length of the hind tarsi. The first and third costæ are at the base scarcely feebler than the other two, but backward they soon become no more elevated than the transverse lines of the interstices. The penultimate ventral segment is semicircularly incised in the middle.

Three specimens (all males) were sent to me from Western Australia by E. Meyrick, Esq.

TELEPHORUS.

The following three species are, I think, not true members of this genus, although they are near enough to be attributed to it in a general sense provisionally. As it is possible they may fall into M. Fairemaire's genus *Selenurus*, of which I cannot procure a description (certainly none of them are identical with the *species* he has described), I am not justified in giving them a new name. They differ from *Telephorus* in the shape of the elytra, which are abruptly and strongly contracted from the middle to the apex (which is separately rounded), so that close to the apex they are not more than half as wide as at the base, and leave a wide piece of the upper surface of the hind-body exposed on either side; also they have no trace of a spine at the apex of the tibiæ. The apical joint of the maxillary palpi is subcultriform and three or four times as long as the preceding joint.

I possess six examples presenting the above characters, which belong, I think, to three closely allied species. Among these there appear to be five females and one male, * and the sexual differences are very well marked. The male (of course this may not apply to the males of all three species, though in all probability it does) has the head enormously developed, being across the eyes very decidedly wider than the thorax, and quite as wide as the elytra at their widest part. Its hind body on the underside has the lateral (or pleural) portion very wide indeed, and the discal part narrow, and evenly and gently convex, the penultimate segment being extremely deeply incised, with the small apical segment enclosed within the incision and protruding beyond it. In the female the head is considerably narrower than the thorax; the hind body resembles that of the male in general form except that the middle part is pinched together (as it were) into a longitudinal keel on either side of

* It is just barely possible that I may have reversed the sexes; I have no absolute proof as to which is which.

which the surface is longitudinally concave. This appearance is probably caused by the drying up of the soft body, as it is not symmetrical in any of my specimens but it is strongly marked in all the females and absent in the male. The segment in the female corresponding to the penultimate in the male is semicircularly and rather narrowly incised in the middle, and a strong tooth projects from the hinder edge of the incision, the cavity formed by this incision being filled up by an elongate organ which I take to be the ovipositor and which scarcely protrudes beyond the end of the segment. These insects might be referred to the genus *Ichthyurus* were it not for the total incompatibility of their sexual characters.

The fourth species described below (*T. pauxillus*) has quite the facies of a true *Telephorus*, but is not likely to retain its place there when the Australian species come to be dealt with *en masse* by a competent authority. Its tibiæ are devoid of any distinct apical spine, and the last joint of its maxillary palpi is not securiform but oval, with the apex truncate ; and is very much wider, and considerably longer, than the preceding joint. I do not observe any other very notable difference from *Telephorus*, but have not dissected a specimen. I may add the remark concerning the Australian species in general attributed to *Telephorus* that their place there seems to me only provisional, *T. pulchellus*, W. S. Macleay, for example, having tibiæ devoid of apical spines, peculiar maxillary palpi, and sexual organs, &c.

T. proprius, sp. nov. (mas). Parce pubescens ; testaceus ; capite postice, palpis antennis, pedibus (femoribus basi exceptis), metasterno et abdominis segmentis postice, piceis vel piceo-nigris ; elytris cyaneo-nigris, haud nitidis, confuse subgranulatis ; antennis corpore vix brevioribus. Feminæ capite toto nigro, elytris antice subnitidis ; antennis corpore evidenter brevioribus. Long. 3—3¼ l.

The thorax is widest in front, and is gently and roundly narrowed to the base, with all its angles rounded off. It is slightly wider than long ; its surface is smooth and shining, but somewhat (and undefinedly) uneven. Especially there appears to be a vague depression in the middle, the central part of which is roundly protuberant, and there are some indistinct depressions and calli about the sides. On the elytra a scarcely traceable costa runs from the shoulder towards the hinder part of the suture. In the male the elytra are nearly opaque at the base, and become quite so towards the apex. In the female they are subnitid about the base and opaque behind. The surface is subgranulate or coarsely coriaceous ; more coarsely in front than behind. The difference in colour between the male

and female is probably an accidental variety rather than a sexual distinction.

Three specimens occurred on flowers near Port Lincoln.

T. Andersoni, sp. nov. (femina). Parce pubescens; testaceus; capite, antennis, palpis, pedibus, lineis in prothorace nonnullis, et maculis in corpore subtus, nigris vel piceo-nigris; elytris læte cyaneis, antice nitidis sublævigatis; postice opacis, granulatis; antennis corpore multo brevioribus. Long. 3—3¼ l.

The antennæ are scarcely three-quarters the length of the body. The thorax has the following dark marks:—A short line a little within the margin about the middle of each side, a still shorter line on either side close to the base, and a small spot in the middle (almost obsolete in one of my specimens; probably these are variable). It is decidedly transverse, and is scarcely narrowed behind. On the under side the coxæ, some marks about the apex of the metasternum, and a spot on either side of each of the first five segments of the hind body are blackish. Dedicated to my friend Mr. J. Anderson, of Port Lincoln.

Two specimens occurred on flowers near Port Lincoln.

T. vibex, sp. nov. (femina). Parce pubescens; flavus; capite (maculâ flavâ posticâ exceptâ), palpis, antennis, pedibus, maculis nonnullis in coxis, metasterno, abdominisque apice, nigris; elytris violaceis, antice sublævigatis nitidis valde inæqualibus, postice opacis granulatis; antennis corpore sat brevioribus. Long. 4¼ l.

The head has a large yellow triangular patch behind, the apex of which runs out between the hind part of the eyes. There are some indications of similar marking in the preceding species. The thorax resembles that of *T. Andersoni*, but is a little more contracted hindward, and entirely testaceous. The underside is entirely of a bright canary-yellow colour, except the coxæ (which are black, spotted with yellow) and the head metasternum and extremity of hind body (which are marked with black). The elytra have the humeral callus well defined, and between it and the suture there is a large strongly convex elongate wheal which runs about a third of the distance to the apex, gradually narrowing on its external side. The antennæ are about three-quarters the length of the body.

I possess a single specimen, taken in Victoria. The exact locality is not known to me.

T. pauxillus, sp. nov. Sat elongatus; parallelus; niger vel æneo-niger, prothorace testaceo, hoc quam longiori plus duplo latiori; elytris pubescentibus crebre rugose punctulatis; maris antennis corpore vix, feminæ sat evidenter, brevioribus. Long. 4¼ l.

The head is shining black, impunctate, or nearly so; the prothorax is equally wide before and behind, about twice and a half as wide as long, with the sides gently arched, the angles all rounded off. The elytra are five times as long as the thorax, but not wider than it, their surface rather densely covered with whitish hairs. In some specimens there is a tendency to fuscous clouding about the front and hinder part of the thorax. The underside is shining black.

Near Port Lincoln; generally obtained by sweeping low scrub.

LAIUS.

L. conicicornis, sp. nov. (mas.) Niger, capite prothoraceque flavo-notatis; elytris cœruleis flavo bifasciatis; antennis palpis pedibusque plus minusve flavis, abdominis segmentis postice flavo-marginatis.

Antennarum articulis 1° et 2° valde dilatatis, ceteris gradatim angustatis. Long. 3 l.

The yellow markings on the head consist of a circular ring (interrupted in some examples) touching both the eyes, and a spot within it (sometimes obsolete); the front of the clypeus and the labrum also are yellow (black-lined in some examples). The thorax has a wide yellow margin all round except at the middle of the base (in some examples this margin is infuscate along the front). The anterior elytral fascia has the middle (longitudinally) of its narrowest part at about the middle (longitudinally) of the elytra but is dilated (a little backward and strongly forward) on the suture and the margins, running up the suture nearly to the scutellum. At its narrowest part its width about equals the length of the basal joint of the antennæ; hence its front and hind margins are on each elytron concave, the front being strongly and evenly so, the hind less evenly and much less strongly. The hinder elytral fascia occupies the apex, commencing on either side at a distance from the sutural angle about equal to the length of the hind tarsus and being widely and squarely produced up the suture about half-way to the hinder edge of the anterior fascia. The basal two joints of the antennæ are bright testaceous, the remainder more or less pitchy. The following parts of the underside are yellow—the prosternum (except sometimes the anterior coxæ) a narrow hind margin to all the ventral segments except the last, and the middle part (sometimes very narrowly) of the basal two segments. The front legs, the intermediate tibiæ, and the extreme apex of the hind tibiæ are testaceous. The tarsi (except the front ones) are more or less pitchy. The basal joint of the antennæ forms an elongate triangle placed on the end of a short cylindric stem; its apex

(which is its widest part) is somewhat emarginate and is a little wider than the width of the apex of the front tibia, being about two-thirds as wide as the joint is long. The second joint springs from the external apex of the first joint, than which it is a half shorter; it is very strongly dilated on the inner side, in such fashion that it is fully as wide as the apex of the basal joint and is slightly longer on the inner than the outer side, its inner face being emarginate. The third joint is two-thirds of the length and less than half the width of the second, it is dilated on the inner side and is slightly wider than long. The next six joints resemble it in shape and length, except that the dilatation of each in succession becomes less, and so the joint narrower in proportion to its length. The apical joint is quite slender and about twice as long as the ninth. Thus the apical eight joints form an aggregate wide at the base and tapering regularly to a point at the summit. The head is scarcely shining, coarsely and closely punctured; prothorax with the black space shining and sparingly and strongly punctured, the yellow margins sub-opaque and coarsely punctured. The puncturation of the elytra is sparing and not very strong about the base and apex; towards the middle coarse and close with a tendency to transverse wrinkling. The whole insect is sparingly clothed with long hairs. The prothorax is once and two thirds as wide as long and is five-sixths the width of the elytra; the latter are almost parallel-sided. The markings vary in colour from yellow to yellowish red.

I have not seen this insect except from the Port Lincoln district. The female is unknown to me.

L. nodicornis, sp. nov. (mas.) Cyaneus; antennis, capite, prothorace, elytris, pedibus, et corpore subtus in parte rufoflavis.

Antennarum articulo secundo primo plus duplo majore, primo externe dentato. Long. 2 l.

On the head, the front of the clypeus, and the cheeks are testaceous or red; also on the antennæ, the upper external margin of the basal and whole upper surface of the second joints; on the prothorax the whole surface except the middle of the base; on the elytra a fascia in the middle resembling that of the preceding species but less produced on the suture and margins, and a large apical spot; on the underside the hind margins of the ventral segments; the anterior legs are pitchy testaceous. The basal joint of the antennæ is of the length of the diameter of the eye and is somewhat pear shaped with the external margin produced into a large blunt tooth; the second joint forms a large roundish disc, in area a little

larger than the eye, its under surface blackish and sub-globular, its upper surface testaceous, flattish, and divided into three or four well-defined areolæ; the next four joints are narrow, sub-conic, a little produced on the inner side and very slightly decreasing in width successively; the remainder are broken off in my specimen but probably resemble those immediately preceding them. The upper surface is shining, the head and thorax obscurely punctured, the elytra punctured sparingly and largely about the base and apex, much more closely and coarsely on the intermediate space. The whole insect is clothed with long hairs. The elytra widest behind, where together they are nearly half again as wide as the thorax.

The female differs from the male in being darker coloured (probably a mere accidental variation in the single example before me), having the whole disc of the thorax black and the legs (except the anterior tarsi) wholly pitchy. Its antennæ are pitchy black, the external (supposing the antennæ directed forwards) margin of the basal joints paler, the basal joint resembling that of the male, but unarmed, the second much smaller than the first, obtusely produced internally, the remaining joints slightly narrowed in succession, and each rather sharply produced internally, so that the internal outline of the antennæ as a whole is distinctly serrate.

Taken by Mr. Rothe near Sedan.

L. distortus, sp. nov. Nigro-cyaneus; antennis, capite, prothorace, elytris, pedibusque, in parte testaceis (mas.)—antennarum articulo secundo primo plus duplo majore, primo apice acute spinoso. Long. $1\frac{1}{2}$ l.

The basal two joints of the antennæ, the cheeks, the whole prothorax (except a large black discal spot) and the apex of the elytra, are testaceous; the tibiæ and tarsi are more or less pitchy testaceous. The basal joint of the antennæ about equals in length the diameter of the eye; it is pear-shaped, with a strong erect spine at its apex. The second joint is almost a parallelogram in shape and is twice as wide as long; in area it is larger than the eye; it is attached to the first joint at a point half-way between the middle and the internal end of its base, while the third joint springs almost from the external end of its apical edge. The remaining joints are all slender and subconical, scarcely differing from each other in width but gradually increasing in length. The head and thorax are quite shining, and are only obscurely punctured. The elytra are subopaque, closely and finely punctured (a little more shining and more sparingly punctured about the base and apex) and are dotted over with small tubercle-like pustules. The

whole insect is clothed with long erect hairs. The prothorax is quite twice as wide as long, and is about three-quarters the width of the elytra behind the middle, where they are widest.

The female scarcely differs from the male in size, colour, or markings; the legs, however, are a little more uniformly piceous. The antennæ scarcely differ from those of female *L. nodicornis* except in the basal two joints being clear testaceous.

Two specimens on the flowers of a species of Acacia near Port Lincoln.

N.B.—It is to be noted that in the above descriptions the second joint of the antennæ in the male is supposed to be viewed from directly above its flattened upper surface. From other points of view its appearance is quite different.

CISSIDÆ.

LYCTUS.

L. (*Xylotrogus*) *brunneus*, Steph. In Mr. Masters' catalogue (Proc. Linn. Soc., N.S.W.) this species, probably by a clerical error, is entered as "*L. brunneus*, J. W. Douglas," followed by a reference to the Ent. M. Mag., 1876. In the article referred to, however, Mr. Douglas merely records the fact of his having found *L. brunneus* in England under the bark of some logs of wood that had been imported from Western Australia. The species was described by Stephens long ago in the "Illustrations of British Entomology," and appears to be cosmopolitan. I have met with it myself in the Hawaiian Islands (*vide* Trans. Roy. Dublin Soc., 1885), and it has been recorded from many other localities. M. Lacordaire (in the Gen. des Coléoptères) rejects Mr. Stephens' genus *Xylotrogus* as a frivolous subdivision of *Lyctus*, saying that it has no other distinctive character than the absence of a deep longitudinal fovea on the thorax. I have not Stephens' description to refer to, but whether it notices the following characters or not the species on which the genus is founded differs from typical *Lyctus* in the very evident separation of the anterior coxæ; so that either M. Lacordaire's "hanches antérieures contiguës" in his diagnosis of *Lyctus* requires to be amended or Mr. Stephens' genus must stand. I prefer the former alternative, as it appears to me that the degree of contiguity of the anterior coxæ is not of generic importance in insects of the *Lyctus* type.

L. costatus, sp. nov. Subopacus; elongatus; piceus; prothoracis latitudine majori antice posita; elytris perobscure lineatim punctulatis; interstitiis 4°, 6°, et 8° evidenter elevatis; coxis anterioribus haud contiguis. Long. $2\frac{3}{4}$ l.

This species is clothed with short pubescence, less sparingly

and more evenly than is usual in the genus; the whole surface being minutely coriaceous gives it a dull appearance. It is almost entirely concolorous, except that the thorax is a little the darkest part. The head and thorax are rather coarsely and closely punctured; the latter is strongly convex in front. Immediately behind the front the lateral margins are curved pretty strongly inwards for a short distance, and then curve outwards very slightly to the base, so that their outline is concave, the widest part being the anterior margin. The surface of the thorax is a little uneven, the most evident depression being elongate, wide and shallow, and occupying the hinder part of the disc. Between the suture and what would be the fourth interstice if the puncturation ran evenly in rows there is no distinct puncturation at all. This fourth interstice is slightly elevated and continuously distinct, except at the extreme base and apex; then follow five rows of punctures, clearly traceable under a good lens, the interstices between the second and third and between the fourth and fifth of them being similar to that which precedes them. Hence to the lateral margin the sculpture becomes quite faint and confused again, but there are indications of two obscure costæ near the margin. The sculpture is so slight that under a lens of only moderate power none of it is noticeable except the three slender raised interstices. The anterior coxæ are about as far apart as in *L. brunneus*, and the front part of the prosternum is evenly convex as in that species.

Larger than *L. brunneus*, much less shining, differently coloured, the prothorax more coarsely punctured, and more noticeably at its widest in front; the elytra much more obscurely punctured, and with the raised interstices very much more conspicuous.

A single example occurred at Port Lincoln.

L. parallelocollis, sp. nov. Sat nitidus; elongatus; rufo-piceus; prothoracis lateribus subparallelis, sub-crenulatis; elytris subtiliter striato-punctatis; interstitiis vix convexis. Long. $1\frac{2}{3}$—$2\frac{1}{3}$ l.

More shining and less pubescent than *L. costatus*. Head and prothorax very strongly but not closely punctured. The latter transverse, its front margin strongly convex, its sides nearly straight, the hinder portion of its disc widely flattened. The elytra are distinctly striated, the striæ almost strongly punctured, the sculpture best defined on the disc, where and towards the apex the interstices have a tendency to be convex. The anterior coxæ are separated a little more decidedly than in *L. brunneus*. The anterior part of the prosternum is widely flattened in the middle. In some specimens (perhaps males)

there is a conspicuous rounded tubercle on the hinder part of the under surface of the head, a little in front of the prosternum.

I have taken this insect several times under bark of Eucalyptus, about 30 miles north of Port Lincoln.

L. discedens, sp. nov. Nitidus; elongatus; rufo-castaneus; prothoracis latitudine majori antice posita; elytris subtilissime seriatim punctulatis; interstitiis planis lævigatis; coxis anterioribus sat late separatis. Long. $1\frac{1}{2}$ l.

A very shining species, almost devoid of pubescence. The head and thorax are finely and not at all closely punctured, otherwise resembling the same parts in *L. costatus*. The punctures of the elytral rows are extremely fine, scarcely discernible near the suture; the interstices smooth and shining, and quite flat, except on the hinder part of the disc, where they are scarcely convex. The considerable separation of the anterior coxæ would appear inconsistent with a place in the genus *Lyctus*, but (as I have observed above) there is variation in this respect among the species of the Northern Hemisphere, and I can discover no other difference in this insect from ordinary types.

I have met with this species rarely in the Port Lincoln district under the bark of Eucalyptus.

CIS.

C. Australis, sp. nov. Sat latus; confertim irregulariter sat fortiter punctulatus; nigro-fuscus; sparsim breviter argenteo vel albo pubescens; labro, palpis, antennis (basi exceptâ) pedibusque testaceis; prothoracis margine antico et elytris plus minusve rufescentibus. Long. $\frac{3}{4}$—1 l.

A broad robust species resembling *C. boleti*, Scopoli, in form, but with the margins of the thorax not explanate. The eyes are very little prominent. The thorax at its base is very little (to the eye it appears not at all) wider than its length; viewed from above it seems to be evenly contracted towards the front, but when the fine margin is looked at from the side it is seen to be rather strongly rounded; its front margin projects over the head about as much as in *C. boleti*; its surface is devoid of impressions and is evenly, rather strongly, and moderately closely punctured. The scutellum is more transverse than that of *C. boleti*. The elytra are punctured a little more coarsely than the thorax, the punctures without any tendency to run into rows, and being very confusedly and a little rugosely mixed together, large and small intermingled; the punctuation, however, as compared with that of the elytra of *C. boleti*, being on the whole very much finer and less rugose. The

puncturation of the underside is very sparing, scratchy, and obscure.

Port Lincoln; occasionally in hard fungi on trees. As far as my experience goes the commonest species of the genus, but I have not found any commonly.

C. æqualis, sp. nov. Minus latus; sat elongatus; vix pubescens; æqualiter, minus fortiter, minus crebre punctulatus; coloribus ut in *C. Australi*. Long. $\frac{3}{4}$ l.

The colouring of this little species is exactly that of the preceding, than which it is much more elongate in form, and much more shining. Under a strong lens a very sparing and very short silvery pubescence can be traced, but under an ordinary lens it appears glabrous. The puncturation is very even over the whole surface, is tolerably strong, but not at all coarse or rugose, moderately close, and without any tendency to run in lines. The thorax (which is decidedly transverse) viewed from above appears to be narrowed in something of a curve from the base to the apex; when examined from the side the lateral edging is seen to be considerably finer than in *C. australis* and less strongly rounded in outline; the front margin also is much less convex, not projecting conspicuously over the head. The sculpture of the underside, as in the preceding, is extremely ill defined and scratchy in appearance.

C. munitus, sp. nov. Sat latus; minus nitidus; breviter pubescens; subtiliter confertim punctulatus; fuscus, antennis, palpis pedibusque testaceis; maris capite prothoraceque laminâ transversâ erectâ instructis. Long. $\frac{4}{5}$ l.

This is a wide, very short, species, with elytra not much longer than the head and prothorax together. The latter is very massive, not much wider than long, contracted in a curve, very little from the base to about the middle, and thence rather strongly to the front; the actual lateral margin (which is extremely fine) is, as in *C. australis*, invisible from above. The puncturation of the whole upper surface is rugose, fine, and very close, without any tendency to run into rows. In the male the clypeus is raised in front into a wide erect lamina, emarginate at its apex, about equal in height and width, both height and width being about equal to the distance from the base of the lamina to the apex of the thorax; the front of the thorax rises into a similar lamina, parallel to, and about equal in size with, that of the clypeus.

Port Lincoln.

C. Adelaidæ, sp. nov. Oblongus; nitidus; glaber; sparsim subtiliter punctulatus; nigro-fuscus; antennis, palpis, pedibus, et elytris apicem versus dilutioribus. Long. $\frac{4}{5}$ l.

Somewhat of the same shape as *C. æqualis* but with the sides of the elytra less parallel. The prothorax is rather strongly transverse, with strongly rounded sides and front a good deal produced over the head (the actual lateral margin is very fine and is not visible from above); it is also very convex above longitudinally (*i.e.*, viewed from the side); under a strong lens the puncturation is seen to be moderately large and not very sparse, but shallow. The elytra are very shining, and almost punctureless; under a good Coddington lens there are traces just discernible of very fine and sparing puncturation.

A single specimen was taken by me near Adelaide.

C. setiferus, sp. nov. Sat elongatus; subopacus; niger, setis brevibus erectis albis vestitus; antennis (clavâ exceptâ) palpis pedibusque testaceis; prothorace sparsius, elytris sat crebre, rugulose punctulatis. Long. $\frac{3}{5}$ l.

A rather narrow elongate species, a little wide behind the middle of the elytra, rather evenly beset all over with close erect short stout setæ of a silvery-white colour which tend to run in rows on the elytra. The prothorax is scarcely wider than long, a good deal produced over the head in front, contracted from the base to the apex (most strongly near the base), the sides little rounded, the lateral edging fine, but not excessively so, and visible from above, the surface finely coriaceous and also pretty closely set with larger shallow punctures. The elytra are obscurely but closely and rather rugosely punctured. The puncturation of the underside is ill-defined and obscure under a Coddington lens.

Two specimens in my collection, from Roseworthy.

TENEBRIONIDÆ.

SCYMENA.

The insect that forms the subject of the following description appears to belong to this genus, which was founded by Mr. Pascoe in 1866, for a species from N.S.W. It was, however, only very briefly characterised as follows (I translate from the Latin)—"Characters as in *Phaleria*, but the clypeus deeply and squarely excised. Antennæ shorter than the head. Interfemoral process acute at the apex." Four years later Mr. Pascoe described a second species (from Western Australia) in the "Annals of Natural History," and describes its antennæ as "nearly as long as the *width* of the head," which introduces an ambiguity I think into the generic characters. In characterizing the *species*, however, he says, "closely resembles *Phaleria cadaverina*." The species now before me so singularly resembles that insect that I have little doubt of its generic connection with Mr. Pascoe's insects. But if I am

right in this it is evident that Mr. Pascoe had not seen the male, the sexual characters of which are inconsistent with its being placed in the same *family* even as *Phaleria* (according to M. Lacodaire's system). In describing as a *Scymena* therefore the following species it will be necessary to premise that its antennæ are *quite* as long as the width of the head, that its maxillary palpi have the apical joint subsecuriform, that the metasternum is evidently shorter than that of *Phaleria*, that the elytra are ciliated round the lateral margins, and that in the male the anterior and intermediate tarsi are strongly dilated, while in the female the external margin of the anterior tibia is strongly and roundly dilated at the apex. These characters in conjunction with the quadrate emargination of the clypeus would place the insect in the subfamily *Pedinidæ* of M. Lacodaire, which up to the present time I believe has had no described Australian representative. It is of course quite *possible* that it may not be congeneric with Mr. Pascoe's *Scymena*, but under all the circumstances I think it is better not to propose a new name.

S. Australis, sp. nov. Sat nitida, ferruginea, labro nigro; elytris striatis, striis fortiter, interstitiis vix evidenter, punctulatis. Long. 3 l.

The colour is pale ferruginous, in some parts (generally the head and scutellum) inclining to rufous. The labrum is black. On the underside there is a good deal of reddish colouring down the centre, and the coxæ are almost *fuscous* red in some examples, in some examples the metasternum being conspicuously pallid. The head and prothorax are faintly and moderately closely, but not very finely, punctured. The latter is (across the base) quite twice as wide as it is long down the middle. The scutellum is strongly transverse and triangular in shape. The elytra are striated, not very deeply, each stria containing a row of closely-set strong punctures. Under a good Coddington lens the interstices show faint indications of fine puncturation; the two or three nearest to the suture are slightly convex, the rest almost perfectly flat. The external margin of all the tibiæ is ciliated and obscurely denticulate.

Several specimens (only one of them a male) occurred to me under marine rejectamenta at Port Lincoln.

Differs from both the previously described species of *Scymena* in the greater length of its antennæ. Probably the difference in this respect from *S. amphibia*, Pasc., is not very marked, but that insect is said to have "sulcate punctate" elytra.

C. Lindi, sp. nov. Breviter ovatus; ater, antennarum apice tarsisque rufis; capite prothoraceque granulatis; elytris obscure rugosis, sparsim subtiliter confuse granulatis, punctulato-striatis, interstitiis latis planis. Long. $2\frac{1}{2}$—$2\frac{3}{4}$ l.

This species appears to be closely allied to *C. sphæroides*, which was described A.D. 1842 by the Rev. F. W. Hope, on specimens from Adelaide. Unfortunately, Mr. Hope's description is very brief, consisting of 23 words. In 1859 M. Lacordaire incidentally supplied a somewhat fuller, though not a formal and detailed description. I think I have identified the insect, although if so Mr. Hope's characters are not perfectly exact even as far as they go, and on that account I abstain from furnishing a detailed description of what I take to be *C. sphæroides*. I may just observe, however, that it differs from the description in being of a *pitchy* colour rather than "black," in having the elytra minutely covered with fine dust-like brownish scales (which might have been rubbed off in the type), and in having the thorax not punctulate but granulate when carefully examined—a character, however, which is not very noticeable, except under a very strong lens. It is the only *Cædius* that has come under my notice as occurring near Adelaide. I think there is a doubt as to the identity of the specimen or specimens M. Lacordaire examined with the type, as the learned French author says it is as large as an average-sized *Opatrum*, whereas Mr. Hope gives $2\frac{1}{4}$ l. as the size, which would be much smaller.

The species I have described above is certainly distinct. Its colour is deep black, excepting the tarsi, the mouth organs, and the antennæ, which are reddish, especially the apical joint of the last named. The thorax is considerably more than twice as wide as long; it is strongly emarginate in front and narrowly but distinctly lobed in the middle behind; its lateral margin is broadly thickened, and it is arcuately widened from the front nearly to the base, and thence briefly narrowed. The elytra are feebly striated, the striæ set with rather large but feeble punctures, the interstices flat. Under a powerful lens the interstices are seen to be set with small, and very small, tubercles or granules confusedly mixed together. The anterior tibiæ are triangularly dilated, at the apex externally; there is a well-defined tooth on the external margin just above the middle, above which the margin is obscurely serrate, and in some specimens (occasionally on one tibia only) an additional tooth just above the apical dilatation. The intermediate and posterior tibiæ are denticulate, and spined on the external margin.

This species differs from *C. sphæroides* as described by Mr. Hope in respect of its granular prothorax and non-pilose elytra. It differs from the insect that I suppose to be *C. sphæroides, inter alia*, by its larger size, deep black colour, non-pilose elytra—(it is just possible that the few examples I have seen were abraded)—and especially by the wide flat interstices of the striæ on the elytra.

Port Lincoln, in sandy places. Rare.

CÆDIOMORPHA, *gen. nov.*

Antennarum articulus 11us 10° minor; prothorax basi haud bisinuatus, marginibus lateralibus latis; tibiæ intermediæ et posteriores externe denticulatæ; metasternum brevissimum; corpus suborbiculare.

In other respects I do not observe any difference in the characters from those of *Cædius* as given by M. Lacordaire in the "Genera des Coléoptères." The orbicular shape and the very short metasternum are the most striking features. From *Sobas* (which is not known to me, except by description) this genus may be at once distinguished by the strong anterior triangular emargination of the clypeus, by the presence of a distinct (though small) scutellum, by the posterior four tibiæ not being "simple," and by the form of the antennæ.

C. australis, sp. nov. Piceo-nigra; antennis, palpis, elytrorum marginibus et pedibus piceo-rufis; capite prothoraceque crasse squamose nec crebre punctulatis; elytris obscure striatis, striis crasse, interstitiis fortiter crebrius rugose, punctulatis; subtus crasse crebrius punctulata.

This insect is sparingly beset with very short and but little noticeable hair-like scales of a pale colour, which are a little condensed about the sides of the prothorax; the prothorax and elytra are both ciliated with rather long hairs. The sculpture of the elytra is very peculiar. The entire surface (rather than the interstices as such) is pretty closely covered with strong coarse puncturation; on this a fairly-defined system of striæ seems to be added, with their own serial punctures, which are evidently larger than (though somewhat mixed up with) the punctures of the general surface. The anterior tibiæ are very strongly and triangularly dilated from the base to the apex, the width across the apex being quite half the length. The external margin above the middle is cut into teeth varying in size and number from one large tooth to four or five small ones. The intermediate tibiæ are rather strongly, the hind tibiæ more finely, denticulate externally. The underside of the tarsi resembles the same in *Cædius*. The general form resembles that of *Cytilus*.

Widely distributed in South Australia.

PLATYDEMA.

P. fossulata, sp. nov. Rotundato-ovalis; sat convexa; subnitida; supra nigra; clypeo antice, antennis, palpis, et elytrorum singulorum maculis duabus, testaceo-rufis; subtus brunneo-testacea; pedibus testaceis; capite postice profunde (maris ?), leviter (feminæ ?) concavo. Long. 2 l., lat. $1\frac{1}{5}$ l.

The head and prothorax are moderately strongly, and not very closely, punctured. The width of the prothorax at its base is more than twice its length down the middle, and nearly twice the width of its front margin; the front margin is almost truncate, the base strongly bisinuate, the sides arcuately narrowed from base to front; the hind corners are rectangular and there is a well defined elongate longitudinal fovea on either side at the base half-way between the middle and the hind angles. The elytra are quite strongly striated, the striæ rather finely and closely punctured; the interstices are wide and gently convex (more sharply so towards the sides and apex) and are evenly, very finely, and not closely punctured. The red markings consist of a small ill-defined patch at the humeral angle and an irregular wide stripe on the lateral margin commencing a little behind the middle and extending to the apex. The portion of the head between the eyes is occupied in one of my specimens by a very deep, somewhat semicircular excavation, the sides of which form on either side a strong convex ridge between it and the eye, in the other specimen by a wide shallow depression.

This species would appear to be somewhat allied to *P. limacella*, Pasc, and to differ from it, *inter alia*, in the markings of the prothorax and elytra, in the absence of depression on the part of the prothorax near the scutellum, in the presence of longitudinal foveæ at the base of the prothorax, and in the characters of the head in the male (supposing, and I think there is no doubt, that one at least of my specimens is a male). The elongated basal joint of the hind tarsi, the antennæ much longer than the prothorax, the complete epipleural fold of the elytra, &c., distinguish it from *Hoplocephala* which in some respects it resembles.

Port Lincoln. In a rotten trunk of *Casuarina*.

MESOTRETIS.

M. ferrugineus, Bates (var.?). Among a number of *Coleoptera* sent to me from Western Australia last year by E. Meyrick, Esq., I find a single example appertaining to this genus which I think is probably a variety of the above species. It differs, however, in some particulars that it seems desirable to place on record. The blackish markings mentioned by Mr. Bates are

entirely absent; the puncturation of the underside, while finer and closer than that of the upper surface, is more evenly distributed than I should judge from the description that it is in Mr. Bates' insect, and the hinder angles of the thorax, instead of being obtuse, are exactly right angles, and owing to a very faint sinuation of the sides immediately in front of them appear to be slightly directed obliquely outwards. It is quite possible that this may be a distinct, very closely allied species, but nevertheless the differences are not, I think, inconsistent with the possibility of specific identity.

ULOMOIDES, *gen. nov.*

Antennæ subfiliformes; oculi prominentes; tarsi simplices.

Mentum rounded in front, a strongly elevated keel down its middle; apical joint of the labial palpi sub-securiform, of the maxillary large and moderately securiform; mandibles bifid at the extremity; labrum transverse, emarginate in front; epistoma bent down in front, very rapidly widened backwards, the suture obsolete; antennary orbits moderate, not produced laterally so much as the eyes; antennæ nearly as long as the head and thorax together; joints two to four, narrow, not transverse, three nearly equal to two and four together, five to ten about equal in width, but gradually shortening till nine and ten are moderately transverse, eleven of same width, but longer; femora very little narrowed at base; tibiæ not denticulate, tarsi hairy beneath, moderately slender, basal joint of posterior pair equal to the next two together, apical joint of all moderately elongate; general form depressed. Trochantins of intermediate coxæ not visible.

The above-mentioned characters will differentiate this from all other described genera. It differs from most of the *Ulomidæ* in having somewhat elongate antennæ, and eyes more prominent than the antennary orbits, in which respects it resembles *Mesotretis*, but differs from that genus in respect of its slender simple tarsi and antennæ devoid of a club.

U. humeralis, sp. nov. Subparallelus; sat depressus; minus nitidus; ferrugineus, capite postice, elytris (humeris exceptis) abdomineque picescentibus; capite prothoraceque confertim subtiliter punctatis; elytris leviter striatis; striis fortiter, interstitiis planis subtilius, punctulatis. Long. 2 l.

The prosternum is finely and very closely punctured, except its intercoxal process, which slopes downward somewhat behind the coxæ, and then is turned up at the apex; the metasternum and hind body are finely and rather closely punctured in the middle, very sparingly and very strongly at the sides. The last

two ventral sutures are (as in *Alphitobius*) excessively strongly impressed and angulated at the sides, the fourth being much shorter than the third or fifth. On the upper surface the puncturation (as compared with that of *Alphitobius piceus*, Ol.) is very much finer and closer on the head and thorax, while the elytra are more distinctly punctate-striate, with the interstices much more finely and about equally closely punctured. There is a fairly well defined longitudinal fovea at the base of the thorax on either side.

A few specimens occurred under the bark of drift logs after a flood in the Torrens.

LINDIA, *gen. nov.*

Antennæ clavatæ, clava 4-articulata; oculi sat prominentes; tarsi simplices; corpus cylindricum.

Mentum truncate in front, not keeled, apical joint of labial palpi ovate, of maxillary elongate oblong; mandibles bifid at apex; labrum transverse, at apex slightly emarginate and ciliated; epistoma scarcely emarginate in front, rapidly widened backwards, its suture obsolete; antennary orbits produced laterally as much as the eyes; antennæ as long as the head and thorax together, joints one and two short, three equal to the preceding two, four shorter, five to seven gradually increasing in width and length, eight to eleven forming a rather strong club nearly as long as all the preceding together, eight to ten strongly transverse, eleven narrower, roundly transverse; femora very little narrowed at base; tibiæ not denticulate; tarsi moderately slender, hairy beneath, apical joint nearly equal to all the preceding together, basal joint of posterior pair equal to the next two together; trochantins of intermediate coxæ not visible; general form cylindrical, resembling *Hypophlæus*.

The little insect for which I found this genus is, I think, closely allied to *Hypophlæus*, differing from it chiefly by its even narrower form, distinctly four-jointed antennal club, less prominent eyes as compared with the antennary orbits, comparatively longer basal joint of the hind tarsi, and more deeply-impressed sutures between the apical ventral segments. The apical part of the pygidium (but not so much of it as in *Hypophlæus*) is exposed.

L. angusta, sp. nov. Minus nitida; cylindrica; ferruginea, capite prothoraceque obscurioribus; confertim subtiliter punctata; prothorace quam latiore paullo longiore; elytris sparsim transversim rugatis.

There is a tendency in the puncturation of the head and thorax to become longitudinally confluent; that of the elytra

is evenly distributed and not at all inclined to linear arrangement, although the elytra present some obscure indications of longitudinal striation; the transverse wrinkles on the same are very noticeable. The tibiæ are very like those of *Hypophlæus*, but the anterior pair are a little more dilated towards the apex, with the margins a little more sinuated, and the inner apex of all the tibiæ is briefly spined as in *Alphitobius*.

A few specimens have occurred to me under bark of *Eucalyptus*, near Port Lincoln.

TOXICUM.

T. curvicorne, sp. nov. Nigrum opacum; cornibus capitis sat elongatis; prothoracis apice leviter lobato; antennarum clava quadri-articulata. Long. 5 l.

The thorax is about one-fifth wider at the base than long; it is distinctly though not strongly lobed in front; the sides are nearly straight, and are parallel to each other; the posterior angles are sharply rectangular, the anterior roundly obtuse and little prominent; just within the posterior angles on either side is a rather short and ill-defined longitudinal fovea; the surface is feebly and sparingly, but distinctly, punctured. The elytra are striated, the striæ becoming better defined as they recede from the base and the suture. Each stria is set with moderately large and strong punctures, about 50 punctures in each of the striæ near the suture, a smaller number in the external ones. In the male the entire upper surface of the head is flattened, or rather very slightly concave, and is punctured somewhat similarly to the thorax, except that the punctures are quite sparse in front and become gradually closer backwards. The anterior pair of horns are about as long as the apical joint of the maxillary palpi and are inclined outward and forward. The length of the posterior horns is about the same as the length of the head. They are strongly compressed, their wide faces turned towards each other. They are strongly arcuate (their convexity on the outside) and nearly meet at their apices, which are clothed with yellow hair. In the female the upper surface of the head is flattened, somewhat uneven, and rather closely punctured, with two slight ridges where the posterior horns take their rise in the male.

I have a single pair of this insect, which were sent to me from Victoria.

T. spretum sp. nov. Nigrum; femoribus et antennarum articulo apicali rufescentibus; nitidum; cornibus capitis minus elongatis; prothorace transverso; elytris punctulato-striatis, interstitiis convexis; antennarum clava quadri-articulata. Long. 4½ l.

Thorax at its base about half as wide again as its length down the middle, slightly lobed in front, widest just behind the front, thence very slightly (scarcely noticeably) narrowed backward, its base moderately lobed and on either side foveated, its hind corners rectangular and the front ones rounded off, its surface covered with moderately close and lightly impressed but not particularly fine puncturation. The punctures in the striæ on the elytra are rather large (a little larger than in the preceding species) and somewhat square; the interstices of the striæ are distinctly convex (several near the middle of the disc being almost keel-like) and are smooth and shining. In the male the surface of the head is concave—as usual in the genus; the anterior horns differ little from those of the preceding species; the posterior horns are a little shorter than the length of the head, compressed; they are only *gently* arcuate, and their apices (which are clothed with yellow hairs) are as wide apart as their bases.

T. gracile, Pasc., is the only previously described Australian *Toxicum* of a shining appearance, and having an antennal club of four joints. This insect differs from it in having the elytra not wider behind than in front, the thorax scarcely narrowed hindwards, and (I should judge from the not very precise description) in the finer puncturation of its elytra and the convex interstices of the same.

There is a single specimen in the South Australian Museum, labelled as having been taken in New South Wales.

PTEROHELÆUS.

P. insignis, sp. nov. Parum nitidus; depressus; niger; antennis palpis pedibusque picescentibus; capite rugose crebrius, prothorace sparsim obsolete, punctatis; hoc elytris latiori; elytris transversim rugatis, granulatis, punctulato-striatis, striis nonnullis profundioribus, suturâ (apicem versus exceptâ) prominulâ, apice dehiscente. Long. 9 l. Lat 4 l.

Rather elongate and very depressed. Quite black, except the limbs, which are a little piceous. The surface of the head and prothorax is rendered opaque by excessively minute puncturation, and has also larger puncturation which on the former is rugose, but not strong nor very close, on the latter faint and sparse. The thorax is widest a little in front of the base (where it is twice and a half as wide as its length down the middle), moderately emarginate in front, the anterior angles not passing the front of the eyes and the distance between their apices being half the width of the thorax at its widest part; the dorsal line is scarcely indicated; the explanate margins are quite flat, very little narrowed forwards, and together

not quite half as wide as the space between them. The elytra are very slightly, but continuously, narrowed from the base in their anterior two-thirds and then rounded off to their apex; their surface strongly scored all over with short transverse impressions, punctured in 17 rows, the second, fourth, sixth, eighth, tenth, and twelfth rows of punctures in rather deep striæ, the rest not in striæ; the interstices flat; the explanate margin quite narrow, about a third the width of that of the prothorax, and not narrowed behind. The elytra are finely and sparingly granulate about the sides and apex. The suture is distinctly elevated to the beginning of the declivous apical portion, which slopes downward more strongly (but still quite gently) at its commencement than behind, so that looked at from the side the longitudinal outline appears sinuate behind. Each elytron is separately pointed at the apex, leaving a wide deep gap between the two apices. (It is just possible that this is abnormal.) The eyes are only moderately separated. The prosternum in my specimen is broken at the end, so I cannot characterize it. The tarsi are ferruginous beneath.

Roseworthy.

P. granulatus, Germ. Plentiful in many places near Adelaide. It has a kind of purplish bloom upon it that has not been noticed by its describers. The size varies from five to seven lines.

P. tristis, Germ. In Mr. Macleay's Monograph (Proc. Linn. Soc., N.S.W.) there is an error in the translation of Germar's Latin description of this South Australian species which might render the identification of the insect more difficult than it is, to persons not possessing Germar's memoir. The learned German says of the thorax, "densely and very finely punctate, *with somewhat larger punctures interspersed*," not (as Mr. Macleay has accidentally rendered the words I have italicised) "the punctures rather large and scattered." It is obviously a slip of the pen on Mr. Macleay's part, as what he has written turns the sentence into nonsense. The original description is a very inferior one, so that it is impossible to be quite sure what insect its author had before him; but there is a species in the South Australian Museum which I believe to be identical with it.* I supply the following particulars concerning it, which (important though they are) are not referred to by Germar.

Form narrow, elongate, parallel, and rather depressed (Long. $8\frac{1}{2}$ l. Lat. $4\frac{3}{4}$ l.) Thorax at base twice and a half its length down the middle and twice the distance between the apices of the front angles which just pass the front margins of the eyes. Explanate margins of thorax together decidedly less than half

* Since this was written the Hon. W. Macleay has confirmed the identification.

as wide as the intermediate space. Explanate margins of elytra very narrow (less than half the width of those of the thorax) and of even width throughout. Thorax very evidently narrower than the elytra. Curve of the prosternum not uniform, the hinder part of the prosternal process being less declivous than it should be to continue the curve. If I am right in my identification of this insect the transverse strigosity of the explanate margin of the thorax is hardly noticeable in ordinary specimens.

P. ater, sp. nov. Ovalis; sat nitidus; ater, tarsis piceis; capite fortius rugose, prothorace minus subtiliter crebrius, punctulatis; hujus marginibus explanatis recurvis; elytris suturam et latera versus confuse, disco seriatim, fortius punctulatis. Long. 6 l., lat. $3\frac{2}{3}$ l.

The puncturation of the head is exceptionally strong and rugose. On the thorax there is a system of very fine close puncturation (hardly distinct under a Coddington lens), and also a system of much more sparing and much larger but very lightly-impressed punctures, not unlike those on the thorax of *P. nitidissimus*, Pasc. The width of the thorax at the base is three times its length down the middle, and nearly three times the distance between the apices of the anterior angles, which reach quite fully half way to the front of the head; the explanate lateral margins are very even in width, together are about equal to a third of the intervening space, and are rather strongly turned up at the side (especially in their anterior part); the base is rather strongly bisinuate. There is scarcely any trace of a central longitudinal impression, but the base has a well-marked shallow fovea on either side. The elytra are quite strongly punctured, the punctures forming about nine well-defined longitudinal rows on the disc, outside which, on either side, there is no serial arrangement; the whole puncturation becomes gradually finer from the base to the apex, where it is almost obsolete and quite confused. The explanate lateral margins of the elytra are nearly as wide at the extreme front as those of the thorax, but are gradually narrowed to the apex. The humeral angles are quite obtuse, the humeral callus distinct but not very strong. On the underside the arch of the prosternum is continuous.

This species must be near *P. vicarius*, Pasc., which, however, is said to have the explanate margins of the thorax not recurved and the antennæ "short," with the seriate puncturation of the elytra interrupted only about the base and near the suture, in all which respects it differs from the subject of the above description.

Two specimens of this insect occurred to me in Western Victoria.

P. piceus, Kirby. In his monograph of the genus Mr. Macleay says of this species—"I have specimens of it, or closely resembling it, from all parts of N.S. Wales, from S. Australia, and from Queensland," thus indicating his opinion that it is a somewhat variable species, and a doubt whether more than one species may not be included under the name. I think I have, and have seen, a good many specimens attributable to Kirby's species, and agree with Mr. Macleay both in his opinion and his doubt. The form that, so far as I have seen, alone occurs in S. Australia would not be at once recognised as identical with that described by Mr. Macleay, although it agrees well enough with Kirby's original description, to which Mr. Macleay has very properly added certain particulars that distinguish what he considers, I believe rightly, to be Kirby's insect, from allied species since described. It will be of importance, therefore, to S. Australian students to supplement Mr. Macleay's description by saying that Kirby's expression, "very lightly punctured," in respect of the head and thorax, would be more applicable to S. Australian specimens than Mr. Macleay's "scarcely visibly punctured" in respect of the former, and "smooth" in respect of the latter. I have seen no specimens from this colony in which the puncturation is not quite traceable with a fairly-good lens, and very few in which it is not, though very lightly impressed (as Kirby calls it), nevertheless very distinct. In South Australian specimens, moreover, there is generally a tendency in the fourth, eighth, twelfth, and sixteenth interstices on the elytra to be slightly more evident than the rest; and Mr. Macleay's expression, "last joint of the antennæ red," is a little misleading, for though it is true that this joint is as a rule more *decidedly* red than the rest, yet the last three or four joints, and sometimes the whole antennæ, show a decided *tendency* towards a reddish colour. Some specimens are in a varying degree much larger (up to 11½ l.), narrower, and more parallel than others from which they do not seem to differ otherwise. I take this to be a sexual difference similar to that noted by Mr. Pascoe in his *P. dispar*.

P. planus, Blessig. Concerning this species, Mr. Macleay merely remarks that he has never seen a description of it. As I have a copy of Blessig's memoir it will be well to supply the following abbreviated translation of his description.

"Oblong oval, sub-depressed, pitchy, head punctured, produced on the sides, apical four joints of the antennæ dilated; margin of the thorax and of the elytra dilated, obscurely red, impunctate; thorax transverse very finely punctured; elytra closely striate-punctate, interstices flat. Long. 16·5 mm., lat. 8·5 mm."

"Very near *P. peltatus* in build and colour, but twice as large and somewhat flatter. Clypeus finely punctured; forehead wide between the eyes, more strongly and dispersedly punctured than the clypeus. Antennæ reddish. Thorax widest at base and here fully twice as wide as long, in front strongly emarginate, behind gently bisinuate, very convex and extremely finely and dispersedly punctured, the explanate margin wide, flat but turned up at the edge (flachrinnenförmig), dark red, smooth. Elytra not quite a half longer than wide, very little convex, sometimes reddish; the rows of punctures close together (especially near the suture) and becoming obsolete near the apex, their interstices flat; the explanate margin nearly as wide as that of the thorax, gradually narrowed towards the apex, quite flat at the base. Collected in the neighbourhood of Melbourne."

For the sake of brevity I have omitted those parts of the description which would not differentiate the insect from others of the genus. It is very probable that Mr. Macleay's *P. peltoides* is another name for M. Blessig's species, and must therefore be dropped.

I possess specimens of a *Pterohelæus* from Melbourne, that I believe to be identical with the above, although there is a discrepancy in the width of the elytral margin, which only at the extreme base nearly equals that of the prothorax, being contracted very quickly, thence continuing somewhat evenly (about half the width of the thoracic margin) to near the apex and then gradually narrowing to the end.

P. ovalis, sp. nov. Sat nitidus; ovalis; piceus, antennis, palpis, pedibus et prosterno dilutioribus; capite sparsius, prothorace sparsissime, obscure punctulatis; elytris fortius seriatim punctulatis; his prothoraceque sat late marginatis. Long. 5 l., lat. 3 l.

A remarkably oval form, the lateral outline of the thorax and elytra being an almost continuous curve, slightly sinuate just behind the shoulder and scarcely more so at the junction of the thorax and elytra. Owing to its thinness the explanate margin (as in many other species) has a transparent reddish appearance. The head and prothorax are faintly and sparingly, but not very finely, punctate; the latter is at the base three times as wide as its length down the middle, rather strongly emarginate in front (the anterior angles passing the eyes), moderately bisinuate behind, with the dorsal line a little more evident than usual in the genus, the explanate margins evenly wide throughout their length (the two together being quite half as wide as the space between them) and not concave nor horizontal but sloping outward and slightly downward. Each

elytron bears 17 rows of strong well-defined punctures, which are a little confused near the scutellum and become faint near the apex (the fifth row contains rather more than 40 punctures which retain their distinct seriate order almost to the extreme apex); the interstices are flat, or very nearly so; the explanate margin is as wide at the extreme base as that of the prothorax, but immediately is very much contracted; it is then very *gradually*, but not very evenly, contracted half way to the apex and from that point runs evenly without more contraction, and about one-third as wide as the explanate margin of the prothorax, to the end. The curve of the prosternum is not quite continuous, owing to the hinder end (behind the coxæ) being not so much sloping down as it would have to be to continue the curve evenly.

Streaky Bay.

HYPAULAX.

H. orcus, Pasc. I have specimens that appear undoubtedly to belong to this species (hitherto recorded only from Western Australia) which were taken at Fowler's Bay and Wallaroo.

TENEBRIO.

T. Australis, Boisd. The description of this insect consists of eleven words, and might apply to a considerable number of *Tenebrionidæ*, M. Blessig in 1861 re-described it in a Russian scientific paper. He does not state on what grounds he considered his insect identical with Dr. Boisduval's, but as there is no improbability in its being so, and as he furnishes a very good description, his correctness should be assumed in the absence of evidence to the contrary. As he says, the species he describes (like others Boisduval attributed to the genus) is certainly not a true *Tenebrio*. It appears, however, to belong to the allied genus *Meneristes*, very briefly characterised by Mr. Pascoe in the Annals of Nat. Hist., 1869, and is, I think, probably the species he names *M. laticollis*, Boisd.—at least I have the following reason for thinking so:—Mr. Pascoe states that his description is founded on a specimen received from Dr. Howitt (of Melbourne) as *Baryscelis laticollis*, Boisd. Now, I have in my own collection a specimen bearing that name on the same authority, which is certainly the species M. Blessig describes as *Tenebrio Australis*, Boisd. Singularly enough Mr. Pascoe states that there is a specimen of the same insect in the British Museum labelled *Tenebrio Australis*, McLeay (under which name Boisduval described the insect that is known as *T. Australis*, Boisd.). It seems probable that the explanation of this tangle is to be found in the identity of *T. Australis*, Boisd., and *B. laticollis*, Boisd., the descriptions

of which present no satisfactory difference from each other, and might very possibly have been founded on a mature and an immature specimen of the same species. That Dr. Boisduval committed such errors is well known, as witness M. Lacordaire's note (Gen. des Coléoptères, v. p. 414) that *Pachycœlia sulcicollis*, Boisd., and *Helops sulcicollis*, Boisd. (described separately, 20 pages apart, in the Voy. de l'Astrolabe) are the same insect. As M. Blessig was the first to furnish a satisfactory description of this insect, I think that if my suggested explanation be accepted, his name should stand and that the insect should henceforth be known as *Meneristes Australis*, Boisd. I may add that M. Blessig (without giving a new generic name) furnishes excellent characters to distinguish *Meneristes* from *Tenebrio* and *Menephilus*.

MELANDYRIDÆ.

TEMNOPALPUS, *gen. nov.*

Antennæ 11-articulatæ, leviter clavatæ, clavâ 5 articulatâ; palporum maxillarium articuli 1-3 serrati, articulus 4us magnus, cultriformis; caput sat declive; tarsorum ungues simplices; coxæ anteriores contiguæ prominulæ.

The above mentioned characters will differentiate this genus from the rest of the family. The following particulars, however, should be added:—Labrum sub-truncate in front; apical joint of maxillary palpi nearly equal in length to all the preceding together; mandibles deeply bifid at apex; eyes entire; penultimate joint of tarsi sub-bilobed, the basal and apical joint of all nearly equal to each other, the intermediate joints together being a little shorter in the hind, a little longer in the front and intermediate tarsi than either the basal or apical joint. The marginal line of the prothorax is excessively slender.

T. bicolor, sp. nov. Minus elongatus; pubescens; fortius nec crebre punctulatus; niger; capite subtus in medio, labro, oris membris, mandibulis basi, prothorace, et pedibus (femoribus intermediis et posticis exceptis) rufis; prothorace lateribus rotundato, antice posticeque subtruncato. Long. $1\frac{3}{5}$ l.

The antennæ are equal in length to the head and prothorax together. The basal joint is globular and rather large; joints two to six do not differ much among themselves in size (3 being however the longest) but are all shorter and considerably narrower than the basal joint; the length of none of them except 3 is greater than the width; joints seven to ten are all moderately transverse, equal among themselves, and moderately wider than

the preceding five joints; the apical joint is of equal width but longer and pointed at the extremity. The head and prothorax are covered moderately closely with rather large punctures; the punctures on the elytra are a little smaller and about equally close.

Compared with *Conopalpus brevicollis*, Kraatz, to which the insect bears a certain superficial resemblance, besides the differences in the antennæ, palpi, &c., indicated in the generic diagnosis above, the thorax is less transverse (being a little more than half again as wide as long), much more rounded at the sides, and more coarsely punctured; the head is much less bent down; the elytra are very similarly punctured; the whole insect is also very much smaller. There are some traces of a central longitudinal keel, and some discal furrows on the thorax which are sufficiently irregular to suggest the idea of their being abnormal.

This is a very interesting addition to the Australian fauna. Hitherto no member of the family has been noticed as Australian except the Queensland *Orchesia elongata*, Macl., which is about as different from *T. bicolor* as one species can be from another within the limits of the same family.

A single specimen occurred near Port Lincoln. I have no record of the particulars of its capture.

LONGICORNES.

ATESTA.

A. Angasi, Pascoe. This seems to be a very variable insect. In a series before me that appear specifically indistinguishable the size varies from 5 l. to 9 l., and the apex of the elytra varies from being nearly quite rounded to being distinctly truncate or even emarginate (without either apex of the emargination being spined, however). In some specimens only the apex of the pale spot on the elytra is present, so that there appears to be merely a very small spot placed behind the middle of the elytra. In some specimens, too, the thoracic puncturation is very sparing, or even almost obsolete, and the tubercles are very ill-defined; in some the base and apex of the elytra are rufescent. In the males the hind tibiæ are a little arched. The third joint only of the antennæ carries a defined spine.

A. Tatei, sp. nov. Subangusta; nitida; sparse pubescens; piceo-nigra; antennis palpis pedibusque ferrugineis; prothorace transverso, sublævigato, inæquali; elytris (basi fortiter, apicem versus gradatim subtilius) punctulatis, flavo-maculatis, apice unispinosis; antennarum articulo tertio obsolete spinoso. Long. $9\frac{1}{2}$—$11\frac{1}{2}$ l.

Black, with a slightly pitchy tone; the antennæ palpi and

legs rusty (one example has the basal joint of the antennæ pitchy). There is a yellow spot about the centre of each elytron. In one of my specimens it is large and obscurely continued to the margin, and there is a distinct yellow spot at the apex; in the other it is very small, and the apex is only reddish; the mandibles are a little reddish at the base. The puncturation of the head is large, rough, and ill-defined in front, close and strong behind. The thorax is very shining and almost smooth (having only a few large isolated punctures), except on the sides, where the puncturation is closer and coarse; its surface is uneven with ill-defined smooth swellings, and there is a smooth rounded tubercle about the middle of the lateral margin on either side. The punctures of the elytra are large and moderately close, but scarcely rugose, at the base; they become gradually finer and more sparing towards the apex, but there is no well-marked commencement of their change, and they have very little tendency to a linear arrangement. The third joint of the antennæ carries a short spine, the other joints are unarmed. In one of my specimens the antennæ are of the length of the body, in the other shorter. In one of my examples the metasternum only, in the other the whole under surface, is red. Femora clavate.

This species is allied to *A. Angasi*, Pasc., from which it differs in its sublævigate thorax a little wider than long, in the strong spine at the sutural apex of the elytra, &c., &c.

Two specimens were presented to me some time ago by Prof. Tate. They were taken at Fowler's Bay.

COPTOCERCUS.

C. fraternus, sp. nov. Robustus; longe sparsim hirsutus; niger; antennis, palpis, pedibusque fuscis; elytris ante medium flavo-notatis, postice crebre breviter pubescentibus sparsim fortius punctulatis, apice truncatis. Long. 13 l.

A robust species, sparingly clothed all over (including the legs and antennæ) with long erect hairs of the same colour as the surface from which they spring. The antennæ in one of my specimens are decidedly, in the other scarcely, shorter than the whole length of the insect; in both specimens joints three to six are furnished with external spines decreasing in size—in one joints 7 and 8 also being obscurely spined. The head is closely and roughly but rather finely punctured. The general surface of the prothorax is closely, irregularly, and very coarsely punctured and it bears some impunctate (and consequently more shining) elevated spaces; these consist of a longitudinal patch in the middle of the disc and a series of tubercles running obliquely forward and outward on either side from the base to about the middle of the length of the

thorax and then bending round to the front of the discal polished space, but they are very irregular, and in one of my specimens are almost connected together into ill-defined ridges. The prothorax is equally long and wide, somewhat constricted a little in front of the middle, all the unevenness of the surface being behind the constriction; the sides are distinctly but bluntly tuberculate in the middle. The scutellum is densely clothed with pale adpressed pubescence. The elytra are about four times as long as the prothorax, with, at the base, puncturation very large, coarse and close, which becomes gradually less strong and less close backwards, till at the apex it is sparing and rather feeble. Each elytron is traversed by three costæ (the outermost not well defined) which are strongest at the base and gradually fade away towards the apex; the basal one-third of the surface is shining, the apical two-thirds quite opaque owing to being densely clothed with short adpressed pubescence similar to that on the scutellum. The yellowish markings are confined to the anterior non-pubescent part of the elytra; in one of my specimens they consist of two irregular fasciæ (not reaching the suture or lateral margins) placed close together in the hinder half of the non-pubescent surface, and in the other are reduced to two small spots placed on each elytron close together near the lateral margin. On the underside the metasternum and hind body are densely clothed with silvery grey pubescence.

This species is allied to *C. pubescens*, Pasc., differing from it *inter alia* in its very much larger size, and in the puncturation of the elytra being continued (very distinctly indeed) quite to the apex.

I found two specimens of this fine insect under bark of *Eucalyptus* on Yorke's Peninsula.

BIMIA.

B. femoralis, Saund. I should say there is little doubt but that this is a variety of *B. bicolor*, White, from which it is said to differ in having no black mark on the head, a narrow instead of wide one on the prothorax, and the middle femora yellow instead of black. A short series before me varies in all these respects—no two specimens being coloured quite alike, and no one of them being coloured quite exactly as either of the species named above is said to be, the lightest specimen having a *narrow* blackish line across the head, and the *base* of the intermediate femora *black*, the darkest having the *apex* of the intermediate femora *yellow*.

PHYTOPHAGA.

DIPHYLLOCERA (Westw. Tr. Ent. Soc., v. 213).

This name has stood now for nearly forty years, but nevertheless it was pre-occupied, having been used in 1841 by A. White in Grey's "Two Journies in Australia" for a genus of *Lamellicornes*. White spelt it wrongly, "*Biphyllocera*," but his spelling was corrected by Erichson (in the following year, I believe), who has been followed by subsequent authors. The case appears to be a difficult one to adjust, but I think it should be done by substituting a new name for the Phytophagous genus. Unfortunately, "*Westwoodia*" is pre-occupied. I suggest, therefore, that the name "*Johannica*" be used, associating the learned Professor's insect with his Christian name.

ADDENDUM.

LAMELLICORNES.

CŒLOTHORAX.

C. Oberthueri, Ancey. This insect is attributed in Mr. Masters' Catalogue to South Australia. It was described in 1880 in a French magazine called, I believe, *Le Naturaliste*. Having no other means of identifying it, I have recently applied to M. Ancey for information, and he has very courteously forwarded to me a MS. copy of his description, with the comment that he has discovered the insect to be identical with *Cavonus armatus*, Sharp, a determination which the perusal of his description entirely confirms. The name *Cœlothorax Oberthueri* therefore must take its place as a synonym of *Cavonus armatus*.

Notes on and Additions to the Flora of Kangaroo Island.

By J. G. O. Tepper, F.L.S.

[Read November 4, 1886.]

The "Botany of Kangaroo Island," by Professor R. Tate, F.G.S., &c., was the first work giving an authentic and comprehensive list of the flora of the island (Trans. VI., 116-171). This was published in 1883. Various additions have been made from time to time and published in the Transactions of the Roy. Soc., S.A.

The first-named work enumerates 415 species, of which 11 were considered as peculiar to the island. The additions referred to, after rejecting varieties, &c., comprehended 43 species, thus raising the sum total to 458, and augmenting the endemic species to 12.

The following list adds 70 species, of which four are *new to science*, and several to the province, besides five varieties that may be fairly ranked as species. The number is therefore now increased to 526 in all. These additional plants were obtained through the kind hospitality of Mr. Hy. A. Harpur, then manager, now lessee, of Karatta Station, situated on the banks of the Stunsailboom River, and about seven miles from its mouth.

The plants peculiar to the island enumerated in the "Botany," 1883, were—

1. *Cheiranthera volubilis*, Bentham.
2. *Bevtya rotundifolia*, F. v. M.
3. *Lhotzkya glaberrinia*, F. v. M.
4. *Melaleuca cylindrica*, R. Br.
5. *Cryptandra Waterhousei*, F. v. M.
6. " *halmaturina*, F. v. M.
7. *Petrophila multisecta*, F. v. M.
8. *Helichrysum adenophorum*, F. v. M.
9. *Achnophora Tatei*, F. v. M.
10. *Pultenæa viscidula*, Tate.
11. *Hydrocotyle crassinscula*, Tate.

Of these, No. 8 has to be withdrawn, as the writer found it in January of 1887 near Coonalpyn, in the so-called Ninety-mile Desert. On the other hand, Xanthorrhœa Tateana, *F. v. M.*, at first mistaken for *X. quadrangularis*, until the writer pointed out some of the differences (see Transactions, vol.

VII., p. 52) and remitted specimens of flowers and fruit to the great authority, Baron F. v. Mueller, who established its specific rank. It is suspected of occurring on the continent in various localities, but the doubt appears not yet cleared up.

From specimens gathered in my last excursion, Baron Sir Ferdinand described three species as new, and the additions therefore stand thus—

Xanthorrhæa Tateana, F. v. M.
Lhotzkya Smeatoniana, F. v. M.
Hydrocotyle comocarpa, F. v. M.
Candollea Tepperiana, F. v. M.

These raise the total of the endemic plants of Kangaroo Island to 14.

A considerable number of species have yet to be named by the eminent botanist to whom they were submitted, as he has not yet had the time to spare required for critical examination, and only a few (of which the specific rank is undoubted) have been included in the list under the generic term alone, while some others, apparently agreeing with Bentham's descriptions in his "Flora Australiensis," have been marked by a query in brackets.

A few remarks about some plants and natural features may not be out of place here.

Under the specific name of *Correa speciosa* a number of *varieties* are included, which one may well consider are of so nearly a specific rank as to deserve it, for, as far as has been ascertained by the experiment of cultivation from seed, they show no tendency to run into each other. Those observed at Kangaroo Island are:—

Correa speciosa, Andrews, typical form.
" var., *cardinalis*.
" " *viridiflora*.
" " *glabra*.
" " *pulchella*.

All which differ considerably in habit, foliage, and size and colour of flower, though all agree more or less in structure and form of calyx.

The interesting monotypic Composite *Achnophora Tatei* was found in great profusion and in full flower in the swampy flats formed by the river and its meandering tributaries. It is an annual, with long fasciculate roots and rather large white-rayed flower-heads raised only two to four inches above the ground.

Mt. Taylor, the locality of many interesting species, is an isolated hill a few hundred feet above the general surface; it is distant some eight miles in a north-westerly direction from

Karatta, and a conspicuous landmark for miles around. It consists of the same limestone as the hills forming the coast on the south, but superficially entirely unconnected with them. The superficial aspect is also strikingly similar to the coast hills, including the worn appearance of the stones, the sand filling up and levelling fissures and larger inequalities, and the peculiar assemblage of plants, many of which do not occur in the intervening country so far as I could ascertain. The limestone layers appear to be nearly horizontal and rest upon granite or granitoid rocks, and its base is surrounded by extensive morasses, overgrown most densely by *Cladium filum* and other gregarious plants and shrubs. Another similar hill, Mt. Stockdale, is a mile further south. A few miles to the west of it the handsome *Boronia Edwardsii* was met with plentifully, and also *Cheiranthera volubilis*, the latter long doubtful as a species. Its flowers much resemble those of *C. linearis*, but its slender stems, twisting spirally round low shrubs or sedges, seldom attain 18 inches in length.

List of Plants Additional to the Flora of Kangaroo Island.

Hibbertia virgata, *R. Br.* Karatta.

Cassytha, sp. Karatta. With rough papillose stems, fruit globular, greenish, with dark streaks; flowers not seen. Rare.

Billardiera scandens, *Sm.* Karatta.

Drosera glanduligera, *Lehm.* Karatta, and creek near Kinch's Station.

Tetratheca, sp. Karatta. Leafless, virgate, flowers solitary, pendulous, petals crimson. On poor sandy soil.

Zygophyllum ammophilum, *F. v. M.* Coast hills, Karatta.

Stackhousia spathulata, *Sieber.* C. Couedic, A. Molineux.

Rhagodia parabolica, *R. Br.* Kinch's, Cygnet River.

Daviesia corymbosa, *Smith*; variety mimosoides, *R. Br.* Karatta; along the banks of the Stunsailboom River, five to seven feet high.

Pultenæa rigida, *R. Br.;* var., angustifolia, *F. v. M.* On the slopes of Mount Taylor.

Pultenæa villifera, *Sieber (?).* Harriet River.

" prostrata, *Benth (?).* Queenscliffe.

Dillwynia hispida, *Lindley.* Eleanor River.

Acacia acinacea, *Lindley (?).* White's Lagoon.

" brevifolia, *Benth (?).* Coast hills, mouth of Stunsailboom River.

Acacia salicina, *Lindley.* Karatta.

[Calycothrix, sp. or var., with extremely small, closely adpressed leaves and rose-coloured petals. Small, erect

shrubs, of gregarious habit. High ground west of Western River, very wet in winter.]

Bæckia diffusa, *Sieber*. Dudley Peninsula.

Lhotzkya Smeatoniana, *F. v. M.* Karatta. A low shrub on moist, swampy ground, very densely branched.

Leptospermum erubescens *Schauer*. Head of S. Western River.

Melaleuca squamea, *Labill.* S. Western River.

" ericifolia, *Smith*. Karatta.

Eucalyptus uncinatus, *Turcz*. Scrub, west of the Harriet River.

Cryptandra amara, *Lindley*. Scrub S.W. of Kinch's, Cygnet River.

Spyridium pomaderroides, *Reiss* (*?*) Grassy Creek.

" coactifolium, *F. v. M.* Scrub W. of Harriet River.

" bifidum, *F. v. M.* Karatta.

Hydrocotyle diantha, *DeCand.* Karatta, on wet, rich river flats; prostrate, very small.

Hydrocotyle comocarpa, *F. v. M.* A lowly prostrate plant, on moist rich soil.

Santalum persicarium, *F. v. M.* C. Willoughby (*Horswill*).

Hakea marginata, *R. Br.* (*?*). C. Borda.

Grevillea lavandulacea, *Schlecht.* Var.? Stiff, much branched shrubs, about two feet high; flowers small, usually solitary, pale pink; leaves linear, pungently pointed, about half inch long, and of an ashy tint. In the scrub near Birchmore's Lagoon.

Grevillea aspera, *R. Br.* Variety? Sandy scrub, Karatta. Of tree-like habit, two to four feet high, with few erect branches; leaves lanceolate, obtuse or pointed; flowers not numerous, pale pink.

Grevillea pauciflora, *R. Br.* In dense thickets of mallee on limestone coast hills, mouth of Stunsailboom River and on the slopes of Mount Taylor.

(The *Grevillea pauciflora* noticed in Trans., vol. IX., p. 115, from "head of S. Western River," should be *G. aspera*, var.). Of *G. halmaturina*, Tate, flowers were procured for the first time. They are very small and pale pinkish.

Isopogon ceratophyllum, *R. Br.* Karatta.

Pimelea glauca, *R. Br.* Coast hills, Karatta.

Opercularia ovata, *J. Hook.* Karatta.

Aster ramulosus, *Labill.* C. Willoughby (*Horswill*).

Helichrysum apiculatum, *De Cand.* Coast hills, Karatta.

Microseris Fosteri, *J. Hook.* Coast hills, Karatta, and at the coast, Queenscliff, but rare and very dwarfed.

Lobelia rhombifolia, *de Vriese.* Karatta. Plentifully on burnt ground.

Candollea Tepperiana, *F. v. M.* Mt. Taylor, in fissures and hollows of the limestone filled with sand.

[Limnanthemum exaltatum, *F. v. M.* River banks and clay-pans, high ground.]
Veronica Derwentia, *Littlejohn.* Ravine des Casoars.
Utricularia dichotoma, *Labill.* S.-Western River and Karatta. On moist swampy ground.
Styphelia hirsuta, *F. v. M.* Karatta. A weak plant trailing and winding among dense thickets of Leptospermum, &c., on the banks of swampy rivulets. The same plant occurs also at Square Waterhole, S.A., where it was discovered by me in 1882, but could not be identified for want of flowers.
Styphelia fasciculiflora, *F. v. M.* Moist rich banks, Grassy Creek.
Diuris sulphurea, *R. Br.* Karatta. Moist ground near the river and tributary brooks ; under shelter of dense thickets.
Thelymitra flexuosa, *Endl.* Karatta. In shelter of dense thickets on swampy rivulets.
Acianthus caudatus, *R. Br.* C. Willoughby (*Horswill*).
Lyperanthus nigricans, *R. Br.* C. Willoughby (*Horswill*).
Caladenia Patersoni, *R. Br.* Karatta. Wet ground.
" var. clavigera, *A. Cunn. (?).* C. Willoughby (*Horswill*).
Corysanthes pruinosa, *A. Cunn.* C. Willoughby (*Horswill*).
Eriochilus autumnalis, *R. Br.* C. Willoughby (*Horswill*).
Vallisneria sp. Karatta. Leaves very narrow (filiform) and short. In a shallow pool without communication with the river, except during high floods.
Blyxa Roxburghi, *Rich.* Karatta. Same locality as the last.
Hydrilla verticillata, *Casp.* Karatta. Same as last.
Anguillaria dioica, *F. v. M.* Karatta. Rather scarce along the river.
Thysanotus tuberosus, *R. Br.* Karatta. Sandy hillsides. An erect plant without leaves, and from three to five or more flowers of a rich purple hue ; root tuberous.
Tricoryne elatior, *R. Br.* Mount Taylor. Sandy soil, among limestone. Flowers very small.
Bartlingia sessiliflora, *F. v. M.* Scarce on sandy scrubland, Karatta.
Typha angustifolia, *L.* Lagoon, S.W. of Karatta (*Harpur*).
Potamogeton Tepperi, *Bennett.* [P. natans, *Tate.*] Cygnet and Stunsailboom Rivers.
Lemna trisulca, *L.* Karatta.
" minor, *L.*
Juncus maritimus, *Lam.* Karatta.
Lepyrodia sp. Grassy Creek. Grass-like, from two to four inches, in moist flats.
Cladium schenoides, *R. Br.* C. Borda. Limestone hills.
Carex paniculata, *L. Ravine des Casoars.*
Poa lepida, *F. v. M.* C. Willoughby (*Horswill*).
Aristida Behriana, *F. v. M.* Karatta.

List of the Ophidia of South Australia.

By A. Zietz.

[Read April 5th, 1887.]

The following list is simply intended to enumerate the snakes of this province, with the proper localities where caught. It may be of some interest, as a similar list has never before been published. I have determined the species by reference to the following works:—Krefft's "Snakes of Australia," Macleay's "Census of Australian Snakes," Prof. McCoy's "Proc. Zool., Victoriæ," and Jan's "Iconographie des Ophidiens." As this list is only the result of three years' observation, it is probable that other species may yet be obtained. Four species, viz., *Typhlops bituberculatus*, *Hoplocephalus spectabilis*, *H. ater*, *H. Mastersii*, seem to be peculiar to this province.

One species, *Hoplocephalus nigro-striatus*, hitherto only known from Rockhampton and Cleveland Bay, seems to be abundant at Sedan, South Australia, from which locality I have received many specimens. Most of the other species which inhabit South Australia are well known and widely distributed. Two South Australian snakes, *Hoplocephalus ater* and *H. Mastersii*, are from Flinders Range, but I have not been able to obtain specimens for the Museum collection.

Only the two species of blind snakes and the carpet snake are non-venomous; all the other South Australian snakes are venomous, and four species are dangerous to man, viz., the black snake (*Pseudechis porphyriacus*), the tiger snake (*Hoplocephalus curtus*), the large-scaled snake (*H. superbus*), and the death adder (*Acanthophis antarctica*).

1. Typhlops bituberculata, *Peters.*

Peter's Blind Snake. Monatsber der Akademie der Wissentsch, Berlin; Macleay's Census, &c., No.

Locality.—Koolunga (G. Fullar, August, 1882), Murray Scrub (J. J. East, 1887), Golden Grove (Prof. R. Tate), Murray Bridge (W. T. Bednall).

Habitat.—South Australia.

2. Typhlops nigrescens, *Gray.*

Krefft, Snakes of Australia, p. 17, pl. v., figs. 12, 12*a*, 26.; McCoy, Prod. Zoolog., Victoria, Dec. XI.; Macleay, Census, &c., sp. 5.

Loc.—Neales, near Eudunda, Lyndoch Valley (Dr. Richters),

Sedan (B. S. Rothe), Teatree Gully (Dr. Angove), Blue Well (C. Y. Thomas), Highbury, near Paradise (Frank Farndell), Deep Well, Paratoo (T. H. Stone), Mount Lofty Ranges (H. Weste).

Hab.—Victoria, South Australia, New South Wales.

3. Morelia variegata, *Gray.*

Carpet Snake. Krefft, Snakes of Australia, p. 31., pl. ii.; McCoy, Prod. Zool., Vic. Dec. II.; Macleay, Census, &c., sp. 9.

Loc.—Murray Scrub, &c.

Hab.—Queensland, Victoria, South Australia, New South Wales.

4. Aspidiotes melanocephalus, *Krefft.*

Black-headed Snake. Krefft, Snakes of Australia, p. 33, pls. iii. and v., fig. 4; Macleay, Census, No. 16. One large, beautiful specimen, probably from the Murray, and received from the Zoological Gardens, is now in the Public Museum.

Hab.—Port Denison, northwards to Cape York, and interior of Australia.

5. Diemenia reticulata, *Gray.*

Grey Snake. Krefft, Snakes of Australia, p. 40, pl. xii., fig. 10; Macleay, Census, &c., sp. 43.

Loc.—Edithburgh, York's Peninsula (J. G. McDougall, 1886); Sedan (B. I. Rothe, 1886); Melrose (Elliott Coppen, 1887.) All the specimens from this colony which I have seen are marked with two rose-coloured streaks along the side of the head and neck.

Hab.—From the Murray to Rockhampton; very abundant about Sydney.

6. Diemenia superciliosa, *Fish.*

Common Brown Snake. Krefft, Snakes of Australia, p. 41, pls. vii. and ix., figs 10 and 10a; McCoy, Prod. Zool. Vict. Dec. III.; Macleay, Census, sp. 44.

Loc.—Equally common over the whole colony; sometimes caught in Adelaide and suburbs. The common Brown Snake varies very much in colour and markings; old specimens from light brown to entirely black (Krefft). Young specimens show the black markings on head and neck very distinctly, and are sometimes irregularly black-banded. Banded varieties are scarce in S. Australia. One very beautifully banded variety, 17 in. long, from Sedan (B. S. Rothe) is in the Public Museum. The largest Brown Snakes from this colony I have seen measure 5 feet 6 inches.

Hab.—All Australia.

7. Diemenia microlepidota, *McCoy*.

Small-scaled Brown Snake. Prod. Zool., Vict., Dec. III : pl. 23, figs. 2 and 3.

Loc.—Sedan (Rothe).

Hab.—Junction of Murray and Darling.

8. Pseudechis australis, *Gray*.

Orange-bellied Brown Snake. Krefft, Snakes of Australia, p. 47, pl. vii., 11 and 11*a* ; Macleay, Census, &c., sp. 48.

Loc.—Murray ; scarce in South Australia. One specimen was found at Hindmarsh Island by Mr. J. R. Ewens. Only one specimen, without locality, is in the Public Museum.

Hab.—Murray River and Port Denison.

9. Pseudechis porphyriacus *Wagl.*

Black snake. Krefft, Snakes of Australia, p. 46, pls. vii. and xi., fig. 8; McCoy, Proc. Zool., Vict., Dec. 1.; Macleay, Census, sp. 50.

Loc.—Murray, Lake Alexandrina (Dr. Stirling), Onkaparinga, Coromandel Valley (Alex. Murray), Aldinga. The largest specimen in the Museum collection (a female) was caught by Dr. E. C. Stirling on the Murray. It is more than five feet long.

10. Vermicella annulata, *Gray*.

Krefft's Snakes of Australia, p. 78, pl. xi., fig. 12, 12*a;* McCoy, Proc. Zool., Vict., Dec. VII.; Macleay, Census, &c., sp. 66.

Loc.—Finniss River, Reedy Creek, scrub six miles N.E. from Kadina (Mr. Anthony), Koolunga (G. Fullar, 1881), Neales, near Eudunda (1884), Murray rocks (B. S. Rothe, Ap., 1887). Seems to be scarce in the southern parts of this province.

Hab.—All Australia.

11. Vermicella Bertholdi, *Jan.*

Jan, Iconographie des Ophidiens ; Macleay, Census, sp. 67.

Loc.—Uno (Mr. C. M. Bagot). Two specimens—one young and one matured—in the Public Museum.

Hab.—South Australia and West Australia.

12. Hoplocephalus ater, *Krefft.*

Flinder's Snake. Krefft, Snakes of Australia, p. 55, pl. xi., fig. 11 ; Macleay, Census, sp. 7a. (I have never seen a specimen of this species).

Hab.—Flinders Range, South Australia (Krefft).

13. Hoplocephalus coronatus, *Schleg.*

Krefft, Snakes of Australia, p. 62, pl. vi., fig. 3.

Syn.—*Elaps coronatus*, Gray; *Alecto coronatus*, Dum. & Bib., p. 1255, pl. lxxvi., fig. 2; Macleay, Census, sp. 72. Two specimens in the Public Museum.

Loc.—Port Lincoln.

Hab.—West Australia and South Australia.

14. Hoplocephalus curtus, *Schleg.*

Tiger or Brown-banded Snake. Krefft, Snakes of Australia. McCoy, Proc. Zool., Vict., Dec. 1; Macleay Census, sp. 74.

Loc.—Murray, around Lake Alexandrina, Coorong, Lake Bonney, Yorke's Peninsula, sandhills Glenelg, Kangaroo Island, &c. The largest specimen I have seen was four feet long. From light brown to entirely black coloured, banded or without bands. Next the Brown Snake our commonest snake.

Hab.—All Australia.

15. Hoplocephalus Mastersii, *Krefft.*

Master's Snake. Krefft, Snakes of Australia, p. 63, pl. xii., fig. 6; Macleay, Census, sp. 79.

Hab.—Flinders Range, South Australia. Not represented in the Public Museum.

16. Hoplocephalus nigro-striatus, *Krefft.*

Black-striped Snake. Krefft, Snakes of Australia, p. 70, pl. xii., fig. 3; Jan., &c.; *Alecto dorsalis*, Jan.; Macleay, Census, sp. 83.

Loc.—Sedan, Murray Scrub (B. S Rothe, many specimens); Beetaloo Waterworks (two specimens, Dr. E. C. Stirling.)

Hab.—Rockhampton, Cleveland Bay, and South Australia.

17. Hoplocephalus spectabilis, *Krefft.*

Port Lincoln Snake. Krefft, Snakes of Australia, p. 61., pl. xii., fig. 4.; Macleay, Census of Australian Snakes, sp. 87.

Loc.—Balhannah (Guest), Bungaree (Ed. Raston), Ardrossan (Cadd), St. Vincent (R. and E. Penberty), Millbrook (Fred. Tippett), Glen Osmond (Ch. and Alf. Stroud), Sedan (B. S. Rothe), Murray Bridge (Newman), Belair (O. Tepper), Port Lincoln (Krefft), Scott's Creek, near Nairne (Prof. R. Tate), Teatree Gully (Dr. Angove).

Hab.—South Australia.

18. Hoplocephalus temporalis, *Gould.*

Ann. and Mag. Nat. Hist. (3) Vol. II., p. 130, pl. ix. Krefft, Snakes of Australia, p. 65, pl. vi., fig. 5, 5*a*; Macleay, Census, sp. 90. Five specimens in the British Museum from South Australia.

Loc.—Unknown.

19. Hoplocephalus superbus, *Ganth.*

Large-scaled Snake. Krefft, Snakes of Australia, p. 54, pl. xi., fig. 9; McCoy, Prod. Zool. Victoria, Dec. I. p. 2; Macleay, Census, sp. 89.

Loc.—Mt. Lofty Ranges (O. Tepper); Kangaroo Island (G. Beazley); Marble Ranges; Aldinga (Mr. Duffield).

Hab.—New South Wales, Victoria, Tasmania, South Australia. *Known in Tasmania as the "Diamond Snake," and in Victoria as the "Copper-head."

20. Acanthophis antarctica, *Wagler.*

Death Adder. Krefft, Snakes of Australia, p. 80, pls. x. and xi., fig. 7; McCoy, Prod. Zool. Victoria, Dec. II., pl. 12; Macleay, Census, sp. 93.

Loc.—Sand-hills, Glenelg; Brighton beach; Yarrow, near S. Hummock (Geo. Allen); Ardrossan (Cadd); Hindmarsh Island; Victor Harbour, Coorong sand-hills; Sedan (B. S. Rothe); Port Germein (W. T. Bednall); Torrens Island. Chiefly in sandy localities. (Nocturnal with erect pupilla.)

Hab.—All Australia.

UNCERTAIN SPECIES.

Typhlops, *sp. ?*

Lyndoch Valley (Dr. Richters).

Hoplocephalus flagellum, *McCoy ?*

The little Whip Snake. Proc. Zool. Vict., Dec. II. I have received only two specimens of this little Snake from Mr. H. T. Morris, Anlaby, which differ a little from Prof. McCoy's description of the above mentioned species, and therefore I am not sure if my snake is the same or not, as I have not seen the type specimens. Prof. McCoy mentioned that it seems to be very local in its distribution.

Hab.—Victoria, South Australia (?)

ERRATA.

Page 293, line 16 from bottom:—Instead of "four" read "five."

Page 293, line 13 from bottom, add:—The common brown snake (*Diemenia superciliosa*).

Syn.—*Elaps coronatus*, Gray; *Alecto coronatus*, Dum. & Bib., p. 1255, pl. lxxvi., fig. 2; Macleay, Census, sp. 72. Two specimens in the Public Museum.

Loc.—Port Lincoln.

Hab.—West Australia and South Australia.

14. Hoplocephalus curtus, *Schleg.*

Tiger or Brown-banded Snake. Krefft, Snakes of Australia. McCoy, Proc. Zool., Vict., Dec. 1; Macleay Census, sp. 74.

Loc.—Murray, around Lake Alexandrina, Coorong, Lake Bonney, Yorke's Peninsula, sandhills Glenelg, Kangaroo Island, &c. The largest specimen I have seen was four feet long. From light brown to entirely black coloured, banded or without bands. Next the Brown Snake our commonest snake.

Hab.—All Australia.

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Hab.—Flinders Range, South Australia. Not represented in the Public Museum.

16. Hoplocephalus nigro-striatus, *Krefft.*

Black-striped Snake. Krefft, Snakes of Australia, p. 70, pl. xii., fig. 3; Jan., &c.; *Alecto dorsalis*, Jan.; Macleay, Census, sp. 83.

Loc.—Sedan, Murray Scrub (B. S Rothe, many specimens); Beetaloo Waterworks (two specimens, Dr. E. C. Stirling.)

Hab.—Rockhampton, Cleveland Bay, and South Australia.

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19. Hoplocephalus superbus, *Ganth.*

Large-scaled Snake. Krefft, Snakes of Australia, p. 54, pl. xi., fig. 9; McCoy, Prod. Zool. Victoria, Dec. I. p. 2; Macleay, Census, sp. 89.

Loc.—Mt. Lofty Ranges (O. Tepper); Kangaroo Island (G. Beazley); Marble Ranges; Aldinga (Mr. Duffield).

Hab.—New South Wales, Victoria, Tasmania, South Australia. *Known in Tasmania as the "Diamond Snake," and in Victoria as the "Copper-head."

20. Acanthophis antarctica, *Wagler.*

Death Adder. Krefft, Snakes of Australia, p. 80, pls. x. and xi., fig. 7; McCoy, Prod. Zool. Victoria, Dec. II., pl. 12; Macleay, Census, sp. 93.

Loc.—Sand-hills, Glenelg; Brighton beach; Yarrow, near S. Hummock (Geo. Allen); Ardrossan (Cadd); Hindmarsh Island; Victor Harbour, Coorong sand-hills; Sedan (B. S. Rothe); Port Germein (W. T. Bednall); Torrens Island. Chiefly in sandy localities. (Nocturnal with erect pupilla.)

Hab.—All Australia.

UNCERTAIN SPECIES.

Typhlops, *sp. ?*

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The little Whip Snake. Proc. Zool. Vict., Dec. II. I have received only two specimens of this little Snake from Mr. H. T. Morris, Anlaby, which differ a little from Prof. McCoy's description of the above mentioned species, and therefore I am not sure if my snake is the same or not, as I have not seen the type specimens. Prof. McCoy mentioned that it seems to be very local in its distribution.

Hab.—Victoria, South Australia (?)

Vide Macleay, "Census of Austral. Snakes."

Descriptions of New Species of South Australian Crustaceans.

By A. Zietz.

[Read April 5 and May 3, 1887.]

Plate XIV.

Gryllopagurus lithodomus, *gen. et sp. nov.*

The hermit crab about to be described differs so much from any known species that I have found it necessary to form a new genus for its reception. The essential features may be defined as follows:—Front, acute in the middle; ophthalmic segment exposed, with a mobile scale; eye-peduncles of moderate length, rounded; chelipedes of equal size; fingers, on the tip, spoon-excavated and black coloured; first and second pair of ambulatory limbs longest, with the end joint spiniform and black; third pair short, with the end-joint roundish, and with a roundish rugosity; fourth pair somewhat longer, with a similar rugosity, and a shovel-like prolongation on the basal joint or coxopodite; abdomen soft, roundish, with indistinct calcareous square plates and, only in the female, with four bifid appendages on the left side of the abdomen; the tail-fins narrow and symmetrical.

The only known species lives in self-made burrows in loose stones.

Gryllopagurus lithodomus is a short, robust animal found near tide-mark in shallow water of St. Vincent Gulf. When attacked, the animal retires into its burrow, closing the same perfectly with its chelipedes and first pair of ambulatory limbs, which form when laid together a circular flat operculum when viewed from above. The anterior portion of the crrapace, which is marked by a deep cervical groove from the other regions, shows the form of a heart, but its width is greater than its length. Ths pericardial cavity is marked by the branchio-cardiæ groove as a red shield. The branchial regions are of a pale horny colour. The abdomen is soft, roundish, not spirally coiled, with four indistinct broad transverse plates in both sexes, and, in the female, only on the left side, with four bifid appendages. The tail-fins consist of the telson, of which the first part is divided by a cross groove into two parts, of which the posterior one is again divided by a longitudinal groove; the hind portion of the telson is bilobed. It possesses two pair of tail-fins, of which the first is narrow, with its external part directed backwards, and provided with a patch of small papillæ. The colour in spirit specimens is reddish, and especially the limbs, are marked with large dark-red spots, some of them encircling the limbs, forming bands.

The stones in which this crustacean burrows vary in size, but not always in proportion to the size of the animal. In texture these stones are generally coarsely granular, somewhat loose, and of a calcareous character, often covered with minute algæ. As Mr. J. G. McDougall, of Edithburgh, to whom I am indebted for the specimens, observed, it does not drag the stone about with it. Length of the largest specimen from front to end of tail-fin, 45 mm. Length of its burrow, 65 mm.; width of the same, 15 mm.

Dromia bicavernosa, *sp. nov.* Plate xiv., figs. 5 and 6.

This well-marked species may be described as follows:—

The cephalothorax is broader than long, its anterior border being divided into three wide lobes, of which the middle lobe is formed by the protogastric region. The outer lobes are formed by the hepatic regions. On each side, between the middle and outer lobes, in front of the carapace, and somewhat more deeply situated, are two reniform red marginal cavities, the bottoms of which are covered with short adherent hairs. The whole carapace, as well as other parts of the animal, are covered with chocolate-brown coloured short hairs, which gives a velvet-like appearance to the animal, from which the cavities are strongly marked off by their bright red borders. Viewed from above, these cavities are only partially visible. The anterior part of the margin of each cavity shows in the middle a short inwardly-directed ridge, which is thickest at its termination, where it is somewhat deeper situated, and provided with a tuft of hairs, surrounded by a row of minute impressions semicircularly arranged. On the right-side cavity I numbered 12 impressions, on the left side only 11. The function of these curious cavities is not known, as, unfortunately, the specimen received was in such a bad state of preservation, and internally all the soft parts were so destroyed, that a more careful examination was quite impossible. The specimen examined was a male, and is, as far as known, unique, and I am indebted to Mr. H. Bates, of Hog Bay, Kangaroo Island, for kindly forwarding it.

Fig. DESCRIPTION OF PLATE XIV.

1. Gryllopagurus lithodomus; male.
2. " " female.
3. " " position when in its burrow.
4. " " front view of burrow when closed.

Figures 1 and 4 natural size.

5. Dromia bicavernosa; dorsal view.
5*a*. " " inner view of fifth right ambulatory leg.
6. " " front view.

Figures 5 and 6 half natural size.

Notes on some Rare Varieties of South Australian Snakes.

By A. Zietz.

[Read October 1st, 1887.]

Diemenia superciliosa, *Fischer.*

This specimen is a rare and remarkable variety of the common brown snake. The marks on the neck (usually black) are brown and confluent, but with the superciliary and posterial nasal scutes black. The back, along its whole length, is marked with alternately broad black and yellow bands, each nearly one inch wide, and the light spaces between are decorated with, generally, five undulating and transverse black lines, the anterior and posterior ends of which join the margins of the broad black bands. These marks are particularly distinct upon the posterior two-thirds of the body. The belly is straw coloured, with brick-red spots irregularly distributed, and in several cases they are confluent.

Length of specimen, 17 inches.

It was found at Sedan, South Australia.

Vermicella Bertholdi, *Jan.*

Two specimens of this very rare snake were forwarded from Uno, by Mr. C. M. Bagot, and are now in the Adelaide Museum. It is figured in Prof. Jan's "Iconographie Generale des Ophidiens," under the name, *Elaps Bertholdi*, locality, Adelaide, Australia meridionale. The type specimen is in the Museum of Göttingen, Germany. One of our specimens is probably a matured specimen, and the second a very young one. The habit is stout, with a very short tail. The whole length 25 ctm., of which the tail is only two ctm.; 15 scales around neck, 124 ventral scales, 16 pair of caudals, two anals. The whole body is very smooth and glossy, and alternately black and bright orange, ringed by 29 black and the same number of orange rings; each scale of the orange rings has a light yellow spot in the centre. The lower surface is not nearly so brightly coloured, and the orange rings change into yellowish. The head is, both by its markings and colour, well distinguished from all the other parts of the body, light brownish, with some regular darker markings. The throat has, alternately, indistinctly lighter and darker longitudinal markings. The young specimen, which measures ten ctm., is yellowish white and black banded, but shows the same markings on head and neck as the adult. Our specimens are the first, with exact locality given. This snake has not been figured in its natural colour.

MISCELLANEA.

Some New South Australian Plants from Kangaroo Island. Abstract from the published descriptions.

Hydrocotyle comocarpa, F. v. M.; Victorian Naturalist, Jan., 1887. Karatta; on moist flats along the Stunsailboom River, Nov., 1886, Tepper. A small, few-flowered plant, with leaves 3-5 lobed, and the summit of the roundish fruit surrounded by a series of flattened bristly hairs.

Lhotzkya Smeatoniana, F. v. M.; Austr. Jour. of Pharmacy, Jan., 1887. Five miles N.W. of Karatta; wet localities in dense scrubs. Nov., 1886, Tepper. A small, very densely branched shrub, with small, much crowded, three-sided leaves, and allied to *L. genetylloides*, but smaller in all its parts, the tubes of the calyces, among other characters, constricted at the summit, and the lobes very much smaller.

Candollea (Stylidium) Tepperiana, F. v. M.; Chem. and Drugg. of Aust., Jan. 1st, 1887; Mount Taylor, Nov., 1886, Tepper. A small tufted plant, with the linear leaves small, solitary, collected in two tufts, viz., one radical and one on each trunk, and the pink flowers on slender, stiff pedicels. It approaches nearest to *C. spinulosa*, which, however, has its larger leaves not all collected into tufts, the corolla longer and the upper calyx lobes not highly connate.

Potamogeton Tepperi, Bennett; Journ. of Botany, 1887. Cygnet and Stunsailboom Rivers, lagoons, &c., Feb., 1886., Tepper; interior of Queensland, Bailey (?). An aquatic plant much resembling *P. natans*, L. The lower, submerged leaves narrow, lanceolate, about four inches long by one-half inch wide, brownish; the floating leaves pale green, from oval with cordate bases to ovate with tapering bases, about three inches long by one and a quarter wide, 21-23 veined, coriaceous. Petals long, gradually dilated upwards; stipules soon decaying. Peduncles two to three inches long, thickening upwards; spikes three-quarters to one inch long; dense in fruit, the latter nearly straight on the inner face, rounded, three-angled on the outer, semi-obovate, with a short beak forming a continuation of the

inner face, with projecting processes distributed irregularly on the outer angles. Upper part of the embryo incurved to half its length. Two other species from South Australia—one probably new, and near *P. polygonifolius*, the other unrecorded for the colony, and probably *P. flabellatus*—could not be determined with certainty from the incomplete specimen.

Hydrocotyle diantha, F. v. M., discovered at the same time at Kangaroo Island, was previously only known from Western Australia.

ADDITIONS TO THE QUEENSLAND FLORA, BY F. M. BAILEY From 2 Suppl., Syn. Qu. Fl., Sept., 1887.

Afzelia australis, Bail. Johnstone River. Hitherto considered identical with *A. bijuga*, A. Gray, but conspicuously differing by the bark exfoliating in hard, thick, oval, or oblong patches, while the bark of *A. bijuga* is grey, thin, and peels off in fine, papery scrolls.

Vallisneria caulescens, Bail. and F. v. M.

Teucrium ajugaceum, Bail. and F. v. M.

Hibbertia Millari, Bailey. Very closely allied to *Hemistemma angustifolia*, R. Br.

NOTES ON THE STAPHYLINIDÆ CONTAINED IN THE PUBLIC MUSEUM, ADELAIDE, BY REV. THOS. BLACKBURN, B.A.

In the course of recent studies of South Australian *Staphylinidæ* I have made a careful examination of the specimens in the Adelaide Public Museum belonging to the tribes I-V. of M. Lacordaire, and it will probably be not without interest to furnish the following list of such species found among them as do not appear to have been previously recorded from South Australia. Most of the insects in question were captured by Mr. Tepper:—*Aleochara speculifera* (Er.), *Calodera inæqualis* (Fauv.), *Quedius fulgidus* (Fab.), *Q. ruficollis* (Grav.), *Q. iridiventris* (Fauv.), *Creophilus oculatus* (Fab.) [N.B.—There is no note of locality attached to this specimen.] *Philonthus æneus* (Rossi.), *P. antipodum* (Fauv.), *P. longicornis* (Steph.), *P. macellus* (Fauv.?), *Cafius pacificus* (Er.?), *Xantholinus phœnicopterus* (Er.), *Lathrobium Australicum* (Solsky), *Pinophilus trapezus* (Fauv).

List of Species of Agaricus and Pamis discovered by Miss Wehl near Lake Bonney, and described in the "Grevillea" for 1887 by Dr. M. C. Cooke. Forwarded by Baron Sir Ferd. v. Mueller.

Agaricus olivaceo-albus, Fries; *A. ozes*, Fries, var. *crassipes*; *A. subcorticalis*, Cooke and Mass.; *A. leptospermi*, F. v. Mueller; *A. Wehlianus*, F. v. Mueller; *A. olidus*, Cooke and Mass.; *A. limoneus*, Cooke and Mass. (non Fries).

Pamis carbonarius, Cooke and Mass.

Note on Carcharias hemiodon as an Australian Species, by A. Zietz.

An interesting addition to our knowledge of the local fauna has been made by the capture of an undoubted specimen of the above-named shark. *Carcharias hemiodon* is mentioned by Hon. Macleay in the Proc. Lin. Society, New S. Wales, vol. II., as being an Australian species, but in his descriptive catalogue of Australian fishes he refers the specimens thus named to *Carcharias melanopterus*, Mull. and Henle. The above species resemble each other very much, but according to the descriptions in Gunther's catalogue of fishes in the British Museum, *Carcharias melanopterus* belongs to the section Prionidæ with the base as well as the cusp of some or all the teeth serrated. In the section Hypoprion, to which our fish belongs, the upper teeth are denticulated on the base only. Lower teeth without denticulation. There is only one specimen of this species in the Museum collection; it is 17 in. in length, and was obtained from the Port Adelaide Creek, this being the first observation of its occurrence in Australian waters.

ABSTRACT OF PROCEEDINGS

OF THE

Royal Society of South Australia,

FOR 1886-87.

ORDINARY MEETING, NOVEMBER 4, 1886.

H. T. WHITTELL, M.D., in the chair.

EXHIBITS.—J. G. O. TEPPER, F.L.S., some new and rare plants from Kangaroo Island. A. ZIETZ, *Aglaia lineolata* from the Port Adelaide Creek.

PAPER.—"A revision of the recent Lamellibranch and Palliobranch Mollusca of South Australia," by Prof. R. TATE, F.G.S., &c.

ORDINARY MEETING, DECEMBER 7, 1886.

Prof. RENNIE in the chair.

EXHIBITS.—J. G. O. TEPPER, F.L.S., *Polaphus* sp. new. Six species of indigenous bees from Kangaroo Island, including the Yucca bee. Two butterflies, new for the province, and other insects. Five species of *Grevillea*. A. ZIETZ, *Gryllopagurus lithodomus* from Edithburgh, Y.P.

PAPER.—E. C. STIRLING, M.D., on the "Generation and Method of Parturition of the Kangaroo." THOMAS BLACKBURN, M.A., on the "Staphylinidæ" contained in the Public Museum, Adelaide; also, "Descriptions of Twenty New Species of South Australian Coleoptera." R. H. PULLEINE, on the "South Australian Species of the genus *Calosoma*." W. HOWCHIN, F.G.S., a "Geological Sketch of a Section of Fletcher's Graving Dock at Glanville, with special references to some old beaches." Prof. RENNIE exhibited and explained the standard apparatus for testing the flashing point of petroleum.

ORDINARY MEETING, FEBRUARY 1, 1887.

J. S. LLOYD in the chair.

BALLOT.—A. F. Robin, D. J. Adcock, S. Dixon, Rev. Thomas Blackburn, M.A., were elected Fellows.

Exhibits.—A. Zietz, specimen of *Duboisia Hopwoodii* (pituri) from the River Darling, N.S.W.; dissections of European and Australian crayfish for comparison of exo-skeletonal structure. J. G. O. Tepper, F.L.S., a Mantis, probably new; three new plants from Kangaroo Island, *Lhotzkya Smeatoniana, Stylidium Tepperiana, Hydrocotyle comocarpa.*

Papers.—J. G. O. Tepper, F.L.S., on "Alcoholic Fermentation in Living Trees," by Dr. F. Ludwig (translated). D. B. Adamson, "The Measurement of Eye-pieces for Telescopes." The writer referred to the difficulties of accurately determining the magnifying powers when these became high, and then proceeded to explain the most approved methods for so doing. He exhibited Berthon's Dynamometer, which he considered the best instrument.

Ordinary Meeting, March 1, 1887.

Prof. Rennie in the chair.

Ballot.—Thomas Eyres was elected a Fellow.

Exhibits.—A. Zietz, eight specimens of *Diemenia superciliosa* (brown snake), differing in markings from one another. He considered them varieties of one species. J. G. O. Tepper, F.L.S., musk-beetles *(Trox moschata)* from near Eucla. A new species of *Dactylotum.* Specimen of titaniferous iron from the bed of the River Torrens.

Paper.—Prof. Rennie, "Colouring Matter contained in *Drosera Whittakeri.*"

Ordinary Meeting, April 5, 1887.

Prof. Rennie in the chair.

The State Entomologist at Washington, U.S.A., wrote asking for information with regard to *Icerya Purchasi.*

Mr. Brunetti wrote asking for an exchange of Diptera for the purpose of completing his monograph.

Exhibits.—J. G. O. Tepper, F.L.S., larval form of a species of *Phasma.* A. Zietz, specimen of *Gryllopagurus lithodomus,* found at Edithburgh, Y.P.

Papers.—H. Y. L. Brown, F.G.S., on the "Geology of Teetulpa Goldfields." E. Guest, "Notes on a supposed new Butterfly." A. Zietz, "Description of species of Snakes known to exist in South Australia." W. Russell, "Observations on the recent Comet (1887)."

Ordinary Meeting, May 3, 1887.

Prof. Rennie in the chair.

The Trustees of the "Elizabeth Thompson Fund" for the advancement and prosecution of scientific research, wrote inviting applications for grants of money for such purposes.

Exhibits.—J. G. O. Tepper, F.L.S., collection of European bees. Ova, larva, imago, and cocoons of *Zeuzera eucalypti*, together with a portion of the root of the eucalyptus in which the larva had lived. A. Zietz, *Dromia bicavernosa*, forwarded by H. Bates, Hog Bay, Kangaroo Island. *Carcharias hemiodon* from St. Vincent Gulf.

Papers.—Thomas Parker, C.E., on "Subterranean Waters, with Suggestions for their Utilization." Rev. Thomas Blackburn, B.A., "Descriptions of South Australian Coleoptera, chiefly in the S.A. Museum."

Ordinary Meeting, June 7th, 1887.

Prof. Rennie in the chair.

Exhibits.—J. G. O. Tepper, F.L.S., *Cœlostoma* covered with a waxy looking substance containing ova; locusts from the Far North; specimens of *Bruchus* lately imported. A. Zietz, two specimens of *Œdura* new or rare; rare species of *Tropidolepisma* sent by Sergeant McEwin from Morgan; a species of *Gobius* new to the Museum; rare species of *Chætodon* from J. G. McDougall, of Edithburgh.

Papers.—F. W. Davis, on the "Advisability of establishing a School of Mines." W. L. Cleland, M.B., on the "Polished Surfaces and Water Supply of Caroona Hill, Lake Gilles."

Ordinary Meeting, July 5th, 1887.

Prof. Rennie in the chair.

Exhibits.—J. G. O. Tepper, F.L.S., specimens of *Agaricus incandescens*.

Papers.—Rev. Thomas Blackburn, B.A., on the "Bembidiidæ of South Australia." J. G. O. Tepper, F.L.S., "Kerosine Lamps and Experiments with Kerosine;" also, "Observations of the Habits of the Common Green Mantis:" —A live specimen was received on April 14th. It was then so fierce that it attacked the finger if approached, spreading out its wings partly at the moment. A fly held before it was at once seized and eaten, one pair of its large palpi being placed above, the other below the morsel next the mouth; they were rapidly and incessantly in motion during mastication. I kept it in a small box with a glass lid (9 x 4½ x 2 inches) and fed it

with live flies; dead ones it would not touch (though on one occasion it ate one, still soft, that was jerked past it when hungry), nor would it touch moths or woodlice. On some days it would devour eight to ten flies, inclusive of blowflies, on others less, usually commencing at the head or side, and biting off the wings and legs of its prey in succession as they came in its way. When satisfied, it would catch the flies as vigorously as ever, but only eat off the head, and then drop them. During the night, from the 30th of April to the 1st of May, it laid the first batch of eggs enclosed in a semi-cylindrical case pointed at both ends, and apparently containing 18 partitions directed obliquely towards the base. It was fixed diagonally on the side of the box. For several days before, the mantis exhibited some striking peculiarities in its conduct, inasmuch as it took no food, though striking lazily and aimlessly at approaching flies as if it were blind. The day after the deposition of the ova it again fed as voraciously as ever, having totally recovered its activity, and continued to be very active for several weeks. It is to be remarked that it got perfectly tame after it had been a short time in captivity, and would exhibit no signs of alarm if it were approached by the finger, or the box opened or moved about, or even when brought suddenly near the light out of total darkness. Night or day seemed to make no difference in its appetite while well, and it caught as readily the flies put in at midnight as during any other part of the day. After some four weeks subsequent to the deposition of the first ova the same symptoms as to sluggishness, apparent blindness, and want of appetite were repeated (taking no food for five or six days), and on the morning of May the 28th the second case was found deposited on the opposite side of the box (but this time horizontally) containing the same number of partitions. Flies being put into the box, it was so eager to catch them that it changed its position several times, as if very impatient to break its fast, which it very seldom did otherwise, usually waiting immoveably till its prey came near enough for striking.

Ordinary Meeting, August 2, 1887.

Prof. Rennie in the chair.

Exhibits.—J. G. O. Tepper, F.L.S., cases of insects. W. Howchin, F.G.S., new species of *Foraminifera* from the Carboniferous strata of the North of England.

Papers.—Frazer S. Crawford, on the "*Icerya Purchasi*, with some Notes upon its Parasite." W. Howchin, F.G.S., "Remarks on some New Species of Foraminifera."

Ordinary Meeting, September 6, 1887.

Prof. Rennie in the chair.

Ballot.—John Bagot was elected a Fellow.

Exhibits.—Mr. Wilkinson (Government Geologist, New South Wales), ice-worn pebble from Hallett's Cove. Frazer S. Crawford, specimen of *Cœlostoma*.

Papers.—Rev. Thomas Blackburn, B.A., on some "South Australian Coleoptera and descriptions of new species." J. Dennant, F.G.S., of Victoria, on the "Geological Strata and Fossils of the Beds at Muddy Creek," Victoria.

Annual Meeting, October 5, 1887.

Prof. Rennie in the chair.

Auditor.—W. B. Poole was elected auditor of the accounts for the past year.

Exhibits.—Frazer S. Crawford, *Smynthurydæ* found on a crop of lucerne. A. Zietz, species of snake belonging to the order *Vermicella*, sent by Mr. Bagot from Uno; fossil fish-jaws from Waurn Ponds, Victoria, in the Adelaide Museum, which appeared identical with those of living species.

Hon. Sec. read the annual report.

The Hon. Sec. then read the balance-sheet, duly audited, showing that the receipts had been £189 7s. 3d., and the expenditure £316 14s.

The reports and balance-sheets of the Field Naturalist and Microscopical Sections were also read.

The various reports and balance-sheets were adopted.

Election of Officers:—Prof. Rennie as President, W. Howchin, F.G.S., and R. L. Mestayer, C.E., as Vice-Presidents; Walter Rutt, C.E., as Hon. Treasurer; W. L. Cleland, M.B., as Hon. Secretary; and as Members of Council—H. T. Whittell, M.D., Charles Todd, C.M.G., M.A., D. B. Adamson, J. W. Bussell, Rev. Thomas Blackburn, B.A., and J. Davies Thomas, M.D.

The President (Prof. Rennie) alluded to various points in the work of the past session.

Papers.—Baron v. Mueller, "Descriptions of New Plants from South Australia." Prof. R. Tate, "Gastropoda of the Older Tertiaries of South Australia." Rev. Thomas Blackburn, B.A., "South Australian Coleoptera."

ANNUAL REPORT.

The Council has the pleasure of reporting that the work of the Society has been carried on successfully during the past year, the following papers having been laid before it:—"Respecting the birth of the Kangaroo," by E. C. Stirling, M.D., Cantab.; "On the *Staphylinidæ* contained in the Public Museum, Adelaide," by Thos. Blackburn, B.A.; "Remarks on a Geological Section exposed in Fletcher's Graving Dock," by W. Howchin, F.G.S.; "On Testing the Flashing Point of Petroleum," by Prof. Rennie, F.C.S.; "On Alcoholic Fermentation in Living Trees and what originates it," by F. Ludwig, M.D., translated by J. G. O. Tepper, F.L.S.; "On the Measurement of Eye-pieces," by D. B. Adamson; "The Colouring Matter contained in *Drosera Whittakeri*," by Prof. Rennie; "The Geology of the Teetulpa Goldfields," by H. Y. L. Brown, F.G.S.; "Description of a new Butterfly," by E. Guest; "Descriptive List of Snakes known to exist in South Australia," by A. Zietz; "Observations on the Recent Comet," by W. Russell; "On Subterranean Waters, with suggestions for their utilization," by Thomas Parker, C.E.; "Descriptions of Coleoptera in the Adelaide Museum," by Thomas Blackburn, B.A.; "On the advisability of establishing a School of Mines," by F. W. Davis; "Caroona Hill: its Polished Surfaces and Water Supply," by W. L. Cleland, M.B., Edin.; "The Bembidiidæ of South Australia," by Thomas Blackburn, B.A.; "Kerosine Lamps and Experiments with Kerosine," by J. G. O. Tepper, F.L.S.; "On *Icerya Purchasi*, with some Notes on its Parasite," by Frazer S. Crawford; "Notes and Drawings of some new species of Foraminifera from the Carboniferous Strata of the North of England," by W. Howchin, F.G.S.; "On some new species of Coleoptera," by Thomas Blackburn, B.A.; "Remarks on the Strata at Muddy Creek," by J. Dennant, F.G.S., of Hamilton, Victoria; "Gastropoda of the Older Tertiaries of S.A., Part I.," by Prof. R. Tate, F.G.S., F.L.S.; "Remarks on Cælostoma," by Frazer S. Crawford; "Notes on Australian Coleoptera, with descriptions of new species," by Thomas Blackburn, B.A.; "Remarks upon some Teeth of Fossil Fishes as compared with other recent forms," by A. Zietz; "Note upon a rare Australian Snake in the Adelaide Museum," by A. Zietz; "On the S.A. species of the genus Calosoma," by R. H. Pulleine.

During the year there have been many new and interesting exhibits of natural history, chiefly procured by J. G. O. Tepper and A. Zietz. The principal were:—Some rare and interesting plants from Kangaroo Island, by J. G. O. Tepper; a species of Opistiobranchia (*Aglaia lineolata*) new for Australian waters, by A. Zietz; six species of indigenous bees from Kangaroo Island, by J. G. O. Tepper; two species of Grevillea new for the province, by J. G. O. Tepper; a new species of Dactylotum, by the same; a new species of hermit crab (*Gryllopagurus lithodomus*), by A. Zietz; a new species of sponge crab (*Dromia bicavernosa*), by the same.

The membership of the Society consists of 122 Fellows, 11 Hon. Fellows, 14 corresponding members, and two associates.

Six new Fellows have been elected during the year.

The reports of the two Sections, namely the Field Naturalist and the Microscopical Sections, are laid on the table, and show that both are flourishing and virtually self-supporting. In common with the parent Society, they feel the want of a larger number of individual workers to give them a still greater additional stimulus and vitality. This want seems inseparable from a small community, the majority of whose members are of necessity actively engaged in other pursuits than those of science.

During the past year the library has been enriched by additional volumes of the "Geological and Natural History Surveys of Canada and the United States," and "Additional Descriptions of South Australian Extra-tropical Plants," by Baron von Mueller. The Council has also arranged for an exchange with a Japanese publication, namely the "Proceedings of the Seismological Society of Japan."

In the last annual report the Council referred to the fact that the many valuable books belonging to the Society were about to be transferred to the Public Library when duplicates had been removed. It was found that after this had been done there was such a small residuum left as not to be worth while carrying out the idea. The space at the disposal of the Public Library authorities is so limited as not to allow of the books of the Society being received as a whole.

The Council has considered itself justified in continuing to have plates drawn and printed illustrative of the mollusca of the older tertiary rocks of South Australia, a subject to which Prof. Tate has for some years past applied his extensive and special knowledge. In the volume of the current year will be found the first part of the division dealing with the Gastropoda.

The Council has with much regret to refer to the very large amount that is due on unpaid subscriptions. The unfortunate

effect of this neglect on the part of the Fellows is that the usefulness of the Society is very much crippled thereby, and as a consequence applications for assistance for scientific research received during the past year have had to be most reluctantly refused. In connection with this matter the Council determined to instruct the Secretary not to forward copies of the Society's Proceedings to such Fellows as had not paid their subscriptions. It was hoped that this might serve as a reminder, and possibly act as a stimulus to cause arrears to be paid up. This is the more important, as each year the Society seems to have to depend more upon its own resources and lean less on Government support. At present the expenditure is far exceeding the income, and in a short time the balance to the credit of the Society will have disappeared. The Council, in concluding its report, trusts that the coming year will prove an exception in this particular.

THE TREASURER IN ACCOUNT WITH THE ROYAL SOCIETY OF SOUTH AUSTRALIA.

Dr.	£	s.	d.	£	s.	d.
To Balance October 1st, 1886				388	1	8
" Subscriptions—						
Royal Society	82	19	0			
Field Naturalists' Section ..	20	10	0			
Microscopical Section	8	0	0			
				111	9	0
" Government Grant				61	15	0
" Interest				12	10	0
" Sale of Transactions				3	13	3
				£577	8	11

Cr.	£	s.	d.	£	s.	d.
By Cost of Transactions—						
Printing and Binding	118	12	6			
Illustrating (including £31 10s. for next volume)	110	10	6			
Publishing	7	7	11			
				236	10	11
" Salaries, &c.—						
Assistant Secretary	21	0	0			
Attendant	1	19	0			
				22	19	0
" Advertising				5	5	10
" Printing, Postage, Stamp Tax, and Stationery				12	14	3
" Field Naturalists' Section—						
Grant	23	0	0			
Printing extra copies of Report, &c.	3	0	0			
				26	0	0
" Microscopical Section—						
Grant	13	0	0			
Printing extra copies of Report ..	0	4	0			
				13	4	0
" Balance September 30, 1887—						
Bank of South Australia £78 17 3						
Less Outstanding Cheque .. 8 9 10						
	70	7	5			
" Savings Bank	186	17	6			
" In Prof. Tate's hands for Illustrations	3	10	0			
				260	14	11
				£577	8	11

Audited and found correct,
W. B. POOLE, Auditor.
October 1st, 1887.

WALTER RUTT, Treasurer.

DONATIONS TO THE LIBRARY

For the Year 1886-7.

I.—Transactions, Journals, and Reports.

Presented by the respective Societies, Editors, and Governments.

Baltimore—American Chemical Journal; vol. VII., No. 6. vol. VIII., Nos. 1, 2, 3.

——— Johns-Hopkins' University Circulars; vol. V., No. 47 and 49.

——— Johns-Hopkins' Studies from the Biological Laboratory; vol. III., No. 5.

——— Johns-Hopkins' Historical and Political Science; fourth series, Nos. 1, 2, 4, 5, 6.

Batavia—Natuurkundig-Tijdschrift voor Nederlandsch-Indie; vol. XLVII., p. 7.

Boston—Proceedings of the American Academy of Arts and Sciences; new series; vol. XIII., parts 1 and 2.

——— Proceedings of the Boston Society of Natural History; vol. XXIII.

——— Memoirs of the Boston Society of Natural History; vol. III., Nos. 12, 13.

Belfast (Ireland)—Report and Proceedings of the Belfast Natural History and Philosophical Society for 1885-6.

Berlin—Sitzungsberichte der Koniglich Preussischen Akademie der Wissenschaften zu Berlin; Nos. 1 to 53, 1886, and index, &c., 1887, Nos. 1 to 18.

Brisbane (Queensland)—Plants reputed Poisonous and Injurious to Stock; by F. M. Bailey, F.M.S., and Robinson Gardeu.

Buenos Aires—Boletin de la Academia Nacional de Ciencias en Cordoba (Republica Argentina); vol. VII.. parts 1 to 4, and vol. VIII., parts 1 to 4 (1884 and 1885); vol. IX., parts 1, 2.

California—Bulletin of the Californian Academy of Sciences; No. 4.

Cambridge, U.S.A.—Bulletin of the Museum of Comparative Zoology at Harvard College; vol. XII., No. 6; vol. XIII., Nos. 1, 2, 3, 4.

Cambridge, U.S.A.—Museum of Comparative Zoology at Harvard College. Annual Report of Curator for 1885-6.

Canada—Descriptive Catalogue of a Collection of the Economic Minerals of Canada, by the Geological Corps; Alfred R. C. Selwyn, C.M.G, LL.D., F.R.S., &c.

——— Annual Report, 1885, of the U.S. Geological Survey.

——— Annual Report; vol. I., 1885. Geological and Natural History Survey of Canada, with maps.

Christiania—Reports of the North Atlantic Expedition of 1876-78; part XV., Zoology. Crustacea, No. 2; part XVI., Mollusca; part XVII., Alcyonida; XVIIa., XVIIb., Depths, Temperature, &c.

——— Udgivet af den Norske Gradmaaligskommission Vandstandsobservationer; IV. Hefte, 1887.

——— Die Internationale Polarforschung, 1882-3; Beobachtungs-Ergebnisse der Norwegischen Polarstation Bossekop in Alten.

Dublin—The Scientific Proceedings of the Royal Dublin Society; vol. V. (N.S.), Nos. 3, 4, 5, 6.

——— The Scientific Transactions of the Royal Dublin Society (series II.); XI., on New Zealand Coleoptera, with descriptions of new genera and species; XII., Fossil Fishes of the Chalk of Mount Lebanon in Syria; XIII., on the Cause of Iridiscence in Clouds.

Edinburgh—Proceedings of the Royal Physical Society, 1885-6.

Göttingen—Nachrichten von der Konigl. Gesellschaft der Wissenchaften und der Georg - Augusts - Universität zu Göttingen; 1885, Nos. 1 to 13.

Halle—Leopoldina, Amptliches Organ der Kaiserlichen Leopoldino - Carolinischen Deutschen Akademie der Naturforscher; 1884 and 1885.

Italy—Bollettino dei Musei di Zoologia ed Anatomia comparata della R. Universita di Torina; vol. I., Nos. 9 to 15.

Japan (Yokohama)—Transactions of the Seismological Society of Japan; vol. IX., parts 1 and 2, 1886.

——— Memoirs of the Literature College, University of Japan; No. 1.

——— Journal of the College of Science, Imperial University of Japan; vol. I., part 2.

Lausanne—Bulletin de la Société Vaudoise des Sciences Naturelles, Series 3, vol. XXII., Nos. 94, 95.

Leipzig—Mittheilungen des Vereins für Erdkunde zu Leipzig, 1883, parts 1 and 2, 1884, 1885.
London—Proceedings of the Royal Society; Nos. 238 to 246, 247 to 255.
——— Journal of the Royal Microscopical Society; Series 2, vol. VI., parts 6, 6a., 1887; parts 1, 2, 3, 4.
——— Observations of the International Polar Expeditions in 1882-3; Fort Rae.
——— Journal of the Royal Microscopical Society; Series II., vol. VI., part 5.
——— Proceedings of the Royal Colonial Institute; vol. XVII.
——— Royal Colonial Institute. Catalogue of the Library.
——— Transactions of the Entomological Society, 1886.
——— Meteorological Observations at the Romdon Observatory, Devon, during 1886. By Cuthbert E. Peek, M.A., F.R. Met. Soc., F.R.A.S.
——— Report of Proceedings of the Royal Colonial Institute; vol. XVIII.
Manchester, England—The Origin of Geometry. By Horace Lamb, M.A., F.R.S., &c.
——————— Report and Proceedings of the Manchester Field Naturalists' and Archæologists' Society for 1886.
Munich—Sitzungberichte der Mathematisch-Physikalischen, Classe der k.b., Akademie der Wissenschaften zu Munchen 1886. Heft 1, 2, 4.
——— Gedachtnissrede auf Carl Theodor v. Siebold.
——— Abhandlungen der Mathematisch-physicalischen, Classe der k.b., Akademie der Wissenschaften.
——— Inhaltsverzeichniss der Sitzunberichte der Mathematisch-physicalischen, Classe der k.b. Akademie der Wissenschaften. Jahrgang 1871-1885.
New South Wales—Proceedings of the Linnean Society of New South Wales. Second Series, vol. I., parts 3, 4; vol. II., parts 1, 2.
——————— Journal and Proceedings of the Royal Society of New South Wales; vol. XIX. (1885); vol. XXI., part 1.
——————— A Catalogue of the Marine Polyzoa of New South Wales. By P. H. MacGillivray, M.R.C.S., F.L.S.
——————— Report of the Sydney Free Public Library.
——————— Australian Museum. Notes for Collectors.
——————— " Descriptive List of Aboriginal Weapons, Implements, &c., from Darling and Lachlan Rivers.

New South Wales—Australian Museum. Report of Trustees for 1886.

——————— Supplements to the Reports of the Australian Museum for 1882-3-4-5-6.

——————— Report of Trustees, Free Public Library.

——————— Notes upon the Floods in Lake George. By H. C. Russell, B.A., F.R.S., &c.

——————— Notes upon the History of Floods in the River Darling. By H. C. Russell, B.A., F.R.S., &c.

——————— Results of Rain and River Observations made in New South Wales and part of Queensland during 1886. By H. C. Russell, B.A., F.R.S., &c.

——————— Results of Meteorological Observations made in New South Wales during 1885. By H. C. Russell.

New York.—Annals of the New York Academy of Natural Science (late Lyceum of Natural History); vol. III., No. 9; vol. V., Nos. 2, 3, 4, 5, 6; also, a Review of American Diodontidæ, &c.

New Zealand—Transactions and Proceedings of the New Zealand Institute, 1884; vol. XVII, vol. XIX.

——————— Manual of the New Zealand Coleoptera, parts 3 and 4.

——————— Twentieth and Twenty-first Annual Reports of the Colonial Museum and Laboratory, &c.

——————— Official Record of the New Zealand Industrial Exhibition of 1885.

——————— Report of the Auckland Institute and Museum for 1886-7.

——————— The Eruption of Tarawera, New Zealand. By Percy Smith, F.R.G.S., &c.

Philadelphia—Proceedings of the Academy of Natural Sciences of Philadelphia; part III., August to December, 1885; part I., January to March, 1886.

——————— Transactions of the Wagner Free Institute of Sciences of Philadelphia; vol. I.

Sacramento—Sixth Annual Report of the State Mineralogist; parts 1, 2.

Salem, Mass., U.S.A.—Memoirs of the Peabody Academy of Science; vol. II.

——————— Peabody Academy of Science, Nineteenth Annual Report.

——————— Essex Institute, Bulletins (1885) Nos. 1 to 12.

Salem, Mass., U.S.A.—The Morse Collection of Japanese Pottery; published by the Essex Institute.

South Australia—Forest Department, Annual Report for 1885-6.

———— Notes on Geological Map of Gumeracha and Mount Crawford Goldfields, by H. Y. L. Brown, F.G.S.

———— Report on the Uloloo Goldfield, by H. Y. L. Brown, F.G.S.

———— Mining Records of South Australia, by Henry Y. L. Brown, F.G.S., &c., 1887.

Tasmania—Papers ordered by the Legislature to be printed.

———— Statistics of the colony of Tasmania, for 1884.

———— Papers and Transactions of the Royal Society of Tasmania for 1886.

———— Abstract of Proceedings of Royal Society of Tasmania, June and July, 1887.

———— Annual Report by the Conservator of Forests, 1887.

Tokio, Japan—Journal of the College of Science.

———— Imperial University, Japan; vol. I., part 2.

Trenton, U.S.A.—Journal of the Trenton Natural History Society; vol. I., No. 1.

Turin—Bolletino dei Musei di Zoologia ed Anatomia comparata della Universita di Torina; vol. II., Nos. 19 to 26.

Victoria—Transactions of the Geological Society of Victoria; vol. I., part 1.

———— Australasian Statistics for 1885 and Report.

———— Do., part 5 interchange.

———— Report of the School of Mines, Ballarat, for 1886.

———— Victorian Year Book, 1885-6, H. H. Hayter.

———— The Australian Journal of Pharmacy; vol. II., No. 15.

———— Transactions and Proceedings of the Royal Society of Victoria; vol. XXII.

———— The Victorian Naturalist; vol. IV., Nos. 1, 2, 3, 4, 5, 6.

———— List of Members of the Geological Society of Australasia, &c.

———— Annual Report of the Field Naturalists' Society of Victoria for 1887.

———— Patents and Patentees, with Index, for 1886.

Vienna—Kaiserlich Academie der Wissenchaften in Wien. Sitzung der Mathematisch-naturwissenschaftlichen Classe; Nos. XIX. to XXIV., 1886, 25, 26, 27, and index, 1887, Nos. 1 to 8, 11 to 14.

Vienna—Verhandlungen der Kaiserlich-Königlichen Zoologisch-botanischen Gesellschaft in Wien; XXV., Band 2; XXVI., Band 1 and 2.

——— Verhandlungen der K. K. geologischen Reichanstalt; Nos. 1 to 12, 1886.

Washington—Report of the Board on behalf of United States Executive Departments at the International Exhibition, 1876; vols. I., II.

——————— Bulletins of the United States Geological Survey; Nos. 15 to 26—29.

——————— Fifth Annual Report, U.S. Geological Survey of the Territories, 1883-4.

——————— U.S. Geological Survey of the Territories; vol. IX.—Brachiopoda and Lamellibranchiata of Baritan clays and greensand marls of New Jersey.

——————— Annual Report of the Board of Regents of the Smithsonian Institute for 1884; vols. I. and II.

LIST OF FELLOWS, MEMBERS, &c.

November, 1887.

Those marked (F) were present at the first meeting when the Society was founded. Those marked (L) are Life Fellows. Those marked with an asterisk have contributed papers.

HONORARY FELLOWS.

		Date of Election.
Barkley, Sir Henry, K.C.M.G., K.C.B.	.. .. ..	1857
Ellery, R. L. J., F.R.S.	Melbourne	1876
*Garran, A., LL.D.	Sydney	1853
*Hull, H. M.	Hobart	1855
Jervois, Sir W. F. D., K.C.M.G., C.B.	New Zealand	1878
Little, E.	.. .. ..	1855
Macleay, Hon. W., F.L.S... ..	Sydney	1878
*Mueller, Baron F. von, K.C.M.G., F.R.S.	Melbourne	1879
*Russell, H. C., B.A., F.R.A.S. ..	Sydney	1876
Warburton, Col. P. E., C.M.G. ..	Beaumont	1858
*Woods, Rev. J. E. T., F.L.S., F.G.S.	Sydney	1877

CORRESPONDING MEMBERS.

Bailey, F. M., F.L.S.	Brisbane	1881
Canham, J.	Stuart's Creek	1880
*Cloud, T. C., F.C.S.	Wallaroo..	1881
*East, J. J.	Prospect	1884
*Foelsche, Paul	Palmerston	1882
Goldstein, J. R. Y.	Melbourne	1880
*Hayter, H. H., M.A., C.M.G., F.S.S.	Melbourne	1878
Holtze, Maurice	Palmerston	1882
*Kempe, Rev. J.	Finke	1880
Nicholay, Rev. C. G.	Fremantle, W.A. ..	1886
*Richards, Mrs. A.	Beltana	1880
*Stirling, James, F.L.S.	Omeo	1883

FELLOWS.

*Adamson, D. B.	Adelaide	1867
Adcock, D. J.	Adelaide	1887
Angas, J. H.	Angaston	1874
Bagot, John	Adelaide	1887
*Blackburn, Rev. Thos., M.A. ..	Woodville	1887
Boettger, Otto	Adelaide	1884
Bragg, Prof.	Adelaide	1886
Brown, J. E., F.L.S.	Adelaide	1882
Brown, L. G.	Two Wells	1882

*Brown, H. Y. L., F.G.S.	Adelaide	1883
Bruer, J.	Adelaide	1883
Bussell, J. W.	Adelaide	1884
*Campbell, Hon. Allan, M.L.C., L.R.C.P. Edin.	Adelaide	1882
*Chalwin, Thos., M.R.C.V.S. Eng. ..	Adelaide	1877
Chapple, F., B.A., B.Sc.	Prince Alfred College ..	1876
*Cleland, W. L., M.B., Ch.M., F.R.M.S.	Parkside	1879
*(L)Cooke, E.	Adelaide	1876
*Cooke, W. Ernest, B.A.	Adelaide	1885
Cox, W. C.	Semaphore	1880
Cornish, W. H.	Adelaide	1883
*Crawford, F. S.	Adelaide	1865
*Davenport, Sir Samuel	Adelaide	1856
Davies, Edward	Adelaide	1882
*Davis, F. W.	Adelaide	1882
*Dixon, Samuel	Adelaide	1887
Dobbie, A. W.	Adelaide	1876
Elder, Sir Thomas	Adelaide	1871
Eyres, Thos.	Adelaide	1887
Fleming, David	North Adelaide	1886
*Fletcher, Rev. W. R., M.A. ..	Kent Town	1876
Foote, H.	Outalpa	1883
Fowler, W.	Kulpara	1882
Gardner, Wm., M.D., C.M. ..	Adelaide	1882
Gill, H. P.	Adelaide	1883
Gill, Thomas	Adelaide	1885
Gosse, John, M.R.C.S.	Wallaroo	1884
*Goyder, Geo., jun.	Adelaide	1880
Grasby, W. C.	Adelaide	1887
Grundy, E. B.	Adelaide	1882
* Harris, C. H.	Adelaide	1883
Harrold, A. L.	Adelaide	1876
Hay, Hon. A., M.L.C.	Adelaide	1861
Henry, A., M.D.	Adelaide	1882
Hopkins, Rev. W.	Adelaide	1880
*Howchin, W., F.G.S.	Goodwood East	1883
Hughes, H. W.	Booyoolie	1883
*Hullett, J. W. H.	Port Augusta	1876
Johnson, J. A.	Adelaide	1875
*(F)Kay, R.	Adelaide	1853
Kelly, Rev. Robert	Mount Barker	1884
Knevett, S.	Adelaide	1878
*Lamb, Prof., M.A., F.R.S. ..	England	1883
*Laughton, E.	Adelaide	1874
Lendon, A. A., M.D.	Adelaide	1884
*Lloyd, J. S.	Adelaide	1856
*Lucas, R. B.	Adelaide	1885
Magarey, A. T.	North Adelaide	1873
*Magarey, S. J., M.B.	Adelaide	1874
*Mayo, Geo., F.R.C.S.	Adelaide	1853
Mayo, G. G.	Adelaide	1874
Mestayer, R. L., F.R.M.S. ..	.. .. ..	1883
*Meyrick, E. T., B.A.	Sydney	1881
Middleton, W. J. E.	Upper Sturt	1882
Mitchell, J.T., M.D.	Port Adelaide	1885
Molineux, A.	Kent Town	1880
(L) Murray, Hon. David, M.L.C. ..	Adelaide	1859

Munton, H. S...	Adelaide	1884
O'Leary, M. P., M.R.C.S. ..	Port Victor	1884
*Parker, Thomas, C.E.	Port Adelaide	1883
Phillips, W. H.	Adelaide	1883
Poole, W. B.	Adelaide	1886
Poulton, B., M.D.	Adelaide	1883
Reed, T. S.	Adelaide	1885
Robertson, R., F.F.P.S.	Adelaide	1882
*Rennie, Prof. E. H., D.Sc., F.C.S...	Adelaide	1885
Renner, F. E., M.D.	Carrieton	1885
Robins, A. F.	Adelaide	1887
Russell, William	Port Adelaide	1879
*Rutt, Walter, C.E.	Adelaide	1866
Salom, Hon. M., M.L.C.	Adelaide	1866
*Schomburgk, R., Ph.D.	Adelaide	1865
Scott, Jas. L.	Hyde Park	1865
*Smeaton, Thos. D.	Mount Barker	1857
Smith, R. Barr	Adelaide	1871
Smythe, J. T., B.A., B.E... ..	Glenelg	1882
*Stirling, E. C., M.D., F.R.C.S., M.P.	Adelaide	1881
Stuckey, J. J., M.A.	Adelaide	1878
*Tate, Prof. R., F.G.S.	Adelaide	1876
*Thomas, J. D., M.D., F.R.C.S. ..	Adelaide	1877
*Tepper, J. G. O., F.L.S.	Norwood	1878
*Todd, Charles, C.M.G., M.A., F.R.A.S.	Adelaide	1856
Tyas, J. W.	Adelaide	1882
Umbehaun, C.	Adelaide	1879
*Varley, A. K.	Mount Gambier	1883
Vaughan, A. P., M.B.	North Adelaide	1886
*Verco, J. C., M.D., F.R.C.S. ..	Adelaide	1878
Vickery, G.	Meadows	1868
Ware, W. L.	Adelaide	1878
Wainwright, E. H., B.Sc... ..	St. Peter's College ..	1883
Way, E. W., M.B.	Adelaide	1879
Way, S. J., Chief Justice	Adelaide	1859
Wheeler, F.	Freemantle, W.A... ..	1884
*Whittell, H., M.D., F.R.M.S. ..	Adelaide	1882
Wilson, John, F.E.T.S.	Goodwood	1886
*Wragge, C. L., F.R.G.S.	Brisbane	1887
Young, Wm., M.A.	Hindmarsh	1880
*Zietz, A.	Adelaide	1886

ASSOCIATES.

Hodgson, Mrs.	Port Victor	1884

APPENDIX.

FIELD NATURALISTS' SECTION

OF THE

Royal Society of South Australia.

FOURTH ANNUAL REPORT, 1886-7.

In accordance with the alteration made in the Rules last year, the annual general meeting is held this time in September instead of October, as formerly.

The Committee are pleased to be able to report a well-sustained interest in the work of the Section during the past year.

There have been eleven excursions during the year, most of which have been well attended. The thanks of the Section are due to the following gentlemen for assistance rendered by them in connection with excursions made to their respective districts, viz.:—Messrs E. Guest (Balhannah), G. W. Hannaford (Cudlee Creek), A. Murray (Coromandel Valley), C. F. Newman (Water Gully), Jno. F. Martin (Gawler), and Leonard G. Browne (Buckland Park). To the two last-named gentlemen we are especially indebted for their hospitality.

Six evening meetings have been held, at which seven papers have been read. The attendance on the whole shows an improvement on that of last year. The Committee would again urge upon members to increase the usefulness and interest of the evening meetings by bringing specimens in Natural History.

The first practical steps towards holding a show of native plants were taken during the year. Rules and prize-lists have been printed and distributed, and the first competitive show will be held in October, 1888. The Committee hope that this action will be a means of encouraging the cultivation of our native flora. Evidences of such a result have already been noticed.

The additions to our membership have not been so numerous as last year, and the Committee would take this opportunity of urging members to induce their friends to join the Section, and thus extend its usefulness. The number now on the Roll is 107.

We have not been quite so successful financially as last year, the receipts from subscriptions having been £20 10s., while the expenses amount to £22 15s. 2d. There are, however, arrears which more than cover the difference.

The Committee notice with pleasure the recent establishment of a Boys' Naturalist Class in connection chiefly with our State-schools, and trust that this attempt to popularise the study of Natural History amongst the young in our midst will meet with the success which it deserves.

For the Committee,

J. G. O. Tepper, Chairman.

W. H. Selway, Jun., Hon. Sec.

FIELD NATURALISTS' SECTION OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA.

Receipts and Expenditure for the year 1886-7.

Receipts.	£	s.	d.	Expenditure.	£	s.	d.
To Balance brought forward	0	14	9	By Trawling Expenses	2	0	0
" Amount received from Subscriptions	20	10	0	" Printing	8	10	6
" Grant from Royal Society	23	0	0	" Advertising	2	0	0
				" Caretaker—Attendance	1	1	0
				" Postages and Sundries	9	3	8
					22	15	2
				" Subscriptions handed over to Hon. Sec. Royal Society	20	10	0
				" Balance in hand .. .. .. : ..	0	19	7
	£44	4	9		£44	4	9

Audited and found correct,

W. B. POOLE,
A. F. ROBIN, } Auditors.

Adelaide, 19th September, 1887.

W. H. SELWAY, Jun., Hon. Sec.

MICROSCOPICAL SECTION

OF THE

Royal Society of South Australia.

The Committee beg to report that the work of the Section has been successfully carried on during the past year, although the attendance of members at the meetings is not so good as it should be, considering the numbers on the roll. Our membership is now 42, there having been nine new members elected since last report. One member has resigned in consequence of leaving the colony. The average attendance at ordinary meetings has only been 12. We have held ten meetings, as there was a recess during the months of January and March. The subjects discussed were as under:—

1886.

Oct. 12. Mounting in Canada balsam, with demonstrations, by Mr. W. B. Poole.

Nov. 16. Remarks on application of electricity as a light for the microscope, by Mr. H. Yeates.

Dec. 14. Gossip meeting and exhibition of objects.

1887.

Mar. 8. Measurement by the micrometer and camera lucida, by Mr. F. S. Crawford.

Apr. 12. Discussion on mounting in fluids and glycerine jelly.

May 10. Annual conversazione.

June 14. Cutting and mounting rock sections, by Mr. G. Goyder, jun.

July 12. Diatoms and their resolution, by Dr. H. T. Whittell.

Aug. 9. Gossip meeting and exhibition of objects.

Sept. 13. Annual business meeting.

On Saturday, January 1st, an excursion was made by boat to the North Arm, when a number of interesting objects were obtained by dredging. Amongst them were the following Polyzoa:—*Scrupocellaria cervicornis*, *Amathiæ tortuosa*, Woods; *Menipea*, nov. sp.; *Amathiæ*, nov. sp., allied to *A. mainmata*;

Bugula, allied to *B. (Halophila) Johnstonia; Bowerbankia*, nov. sp. It is to be hoped that more of these excursions will be arranged for during the ensuing summer.

The conversazione was well attended by members and friends. The chairman of the Section (R. L. Mestayer, Esq., F.R.M.S.) gave an interesting and instructive address on microscopical work, in which was much practical advice both to beginners and to those who were more advanced workers with the microscope. There were 24 microscopes exhibited, of various classes, and a large number of objects. Amongst the objects that attracted much attention were the bacilli of various diseases, such as consumption, typhoid fever, Asiatic cholera, &c., exhibited by Dr. Whittell.

Two microscopical magazines — the *American Monthly Microscopical Journal* and the *Journal of Microscopy and Natural Science*—are subscribed for and circulated amongst the members. A box of interesting mounted objects is also kept passing round for the inspection of members at their own homes.

MICROSCOPICAL SECTION OF THE ROYAL SOCIETY OF SOUTH AUSTRALIA.

Receipts and Disbursements for Year ending 30th September, 1887.

Receipts.	£	s.	d.	£	s.	d.
Balance in Hand				0	3	7
Members' Subscriptions—						
Arrears for 1886	1	15	0			
Subscriptions for 1887	6	5	0			
				8	0	0
				£8	3	7

Payments.	£	s.	d.
Hire of Chairs for Conversazione	1	0	0
Magazine Covers	0	15	0
Post Cards and Printing same	2	9	4
Printing	1	5	6
Magazines	0	6	9
Labor at Conversazione	0	3	0
Caretaker	1	10	0
Postages	0	12	6
Cash in Hand	0	1	6
	£8	3	7

Memo.—Arrears of Subscriptions, £7 5s.

Audited and found correct,

J. G. ASHTON, P. PERKINS, } Auditors.

October 12, 1887.

J. W. BUSSELL, Hon. Secretary.

VARDON & PRITCHARD, PRINTERS, GRESHAM STREET, ADELAIDE.

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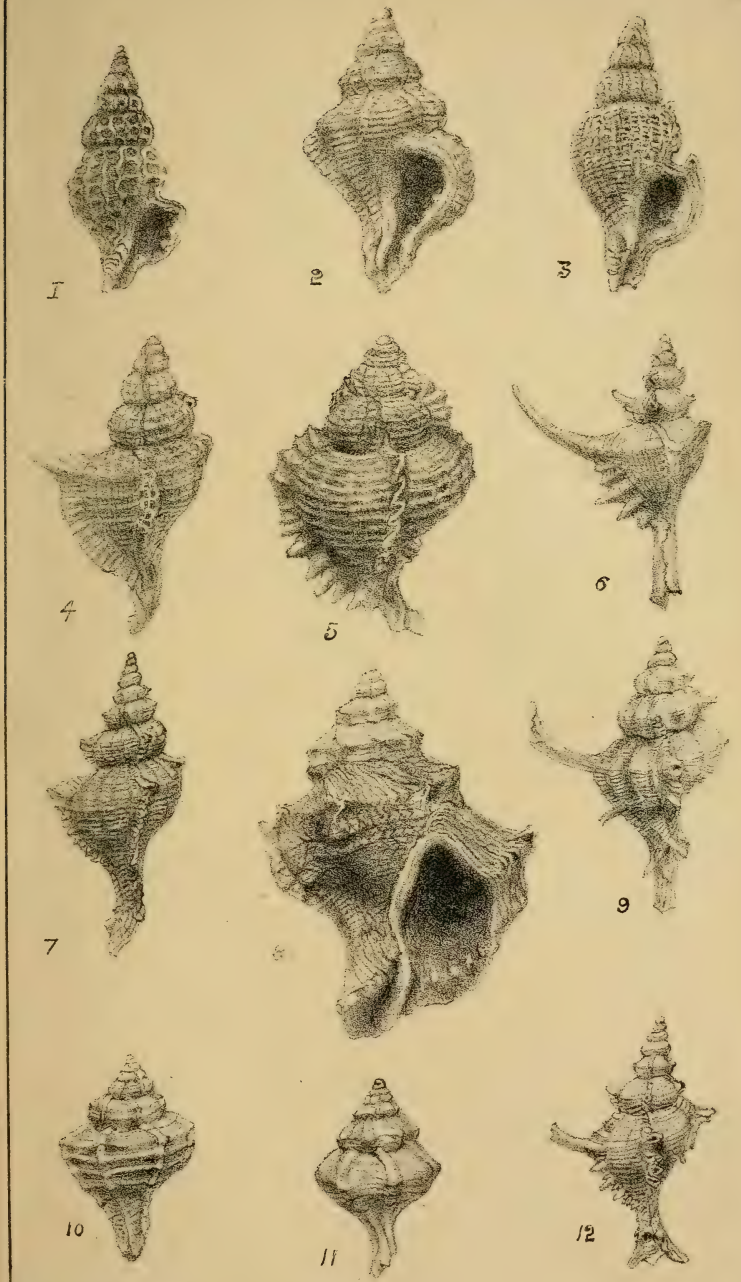
W.J.CHIDLEY DEL



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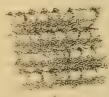
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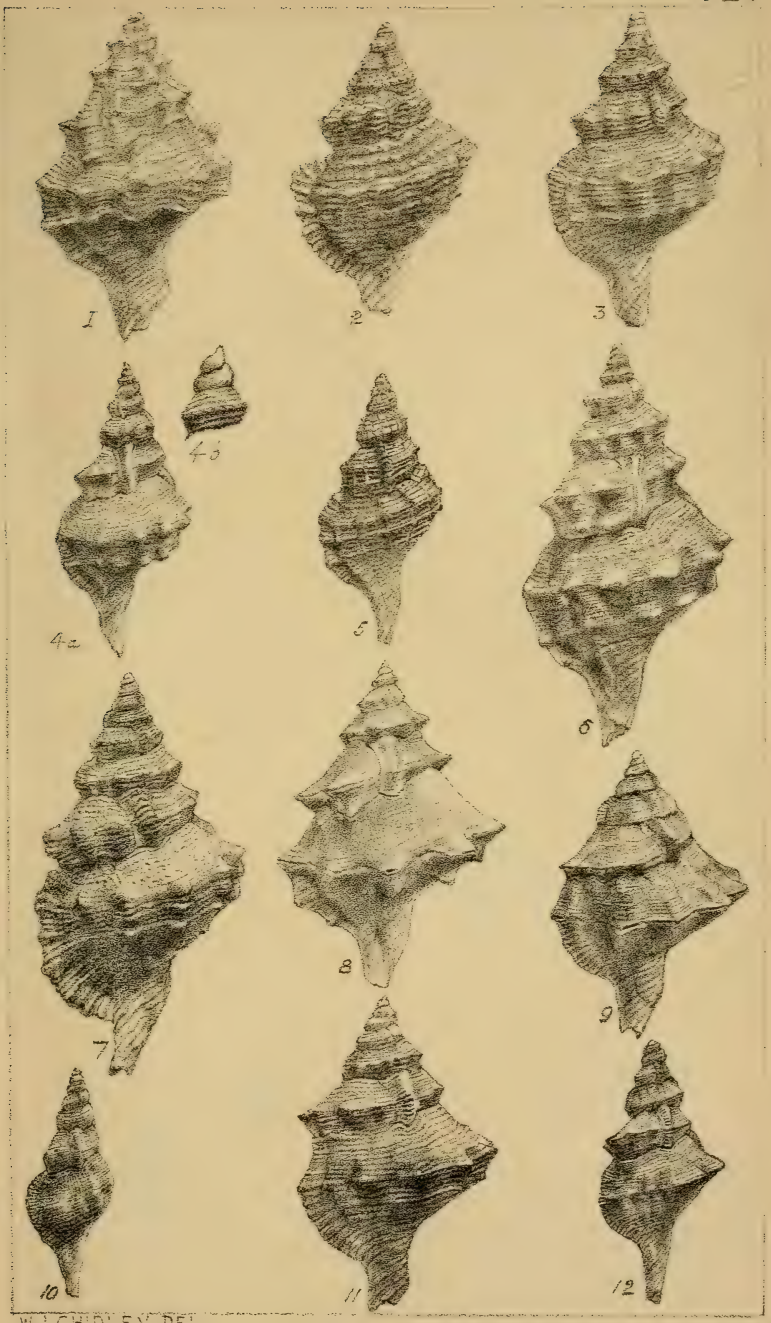

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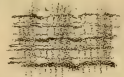

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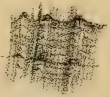

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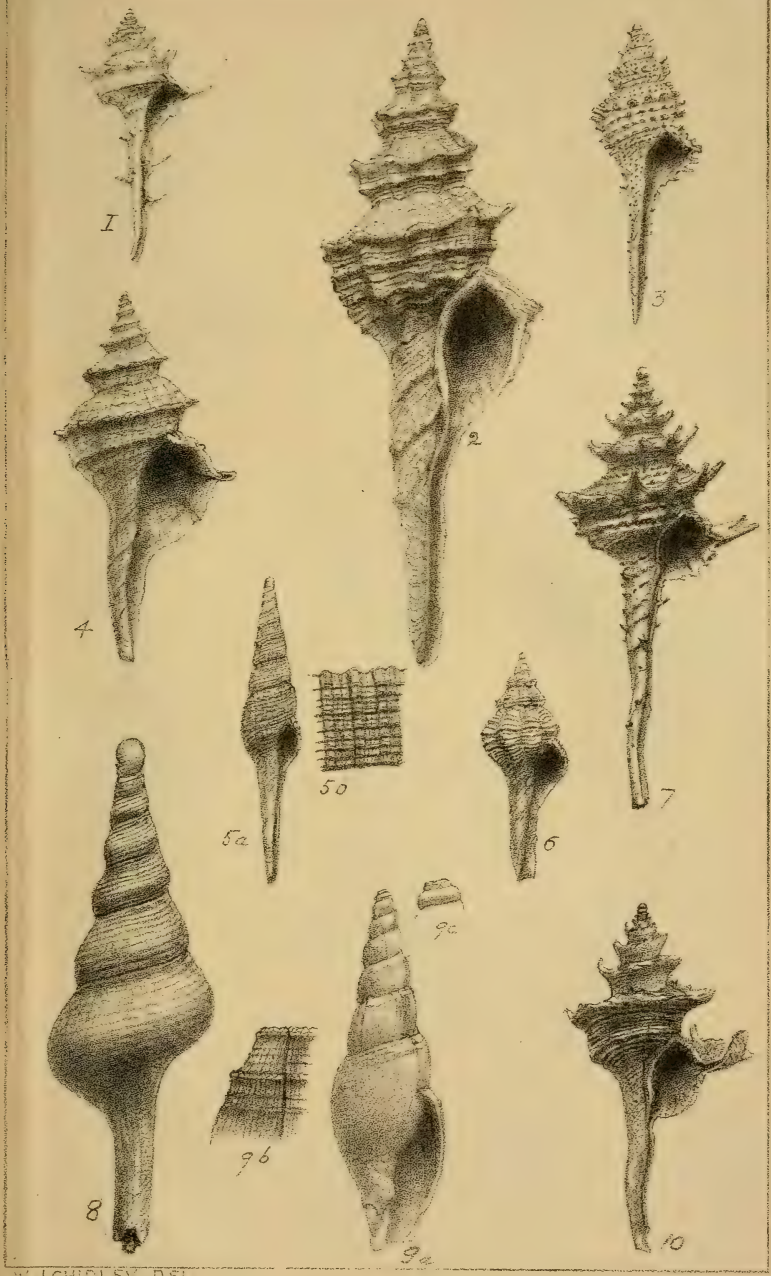

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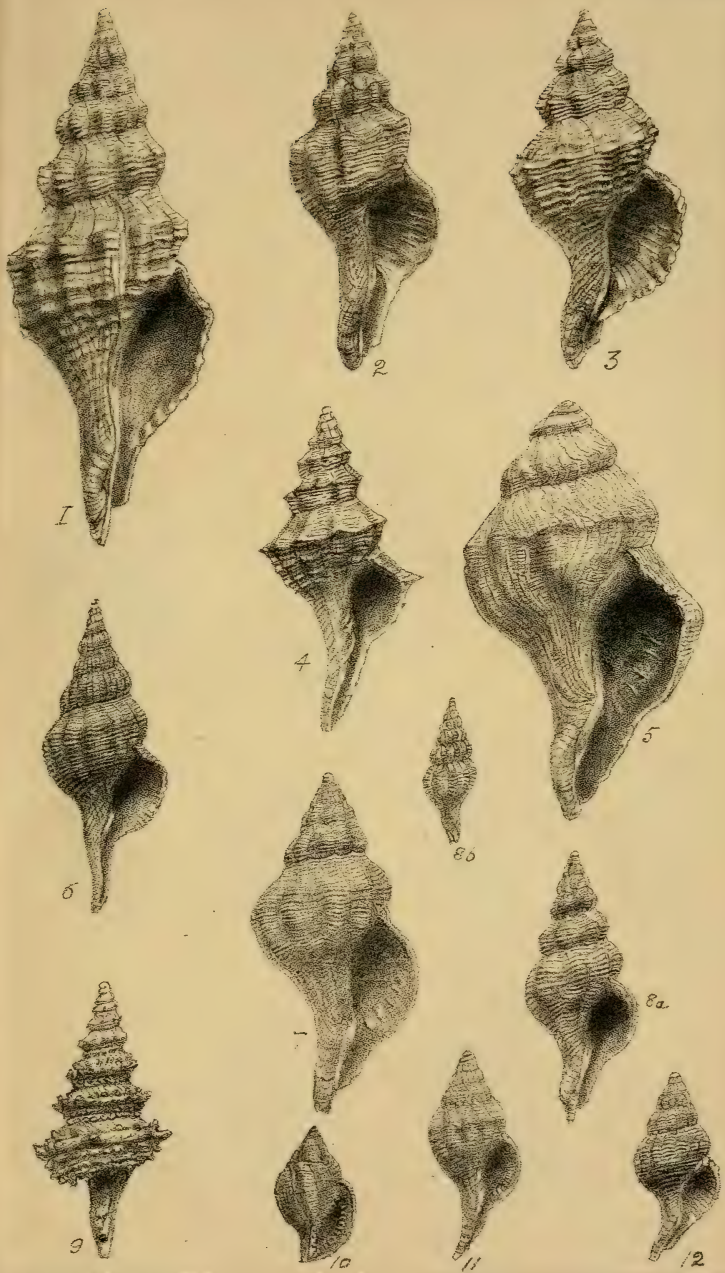

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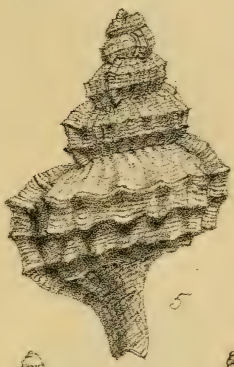
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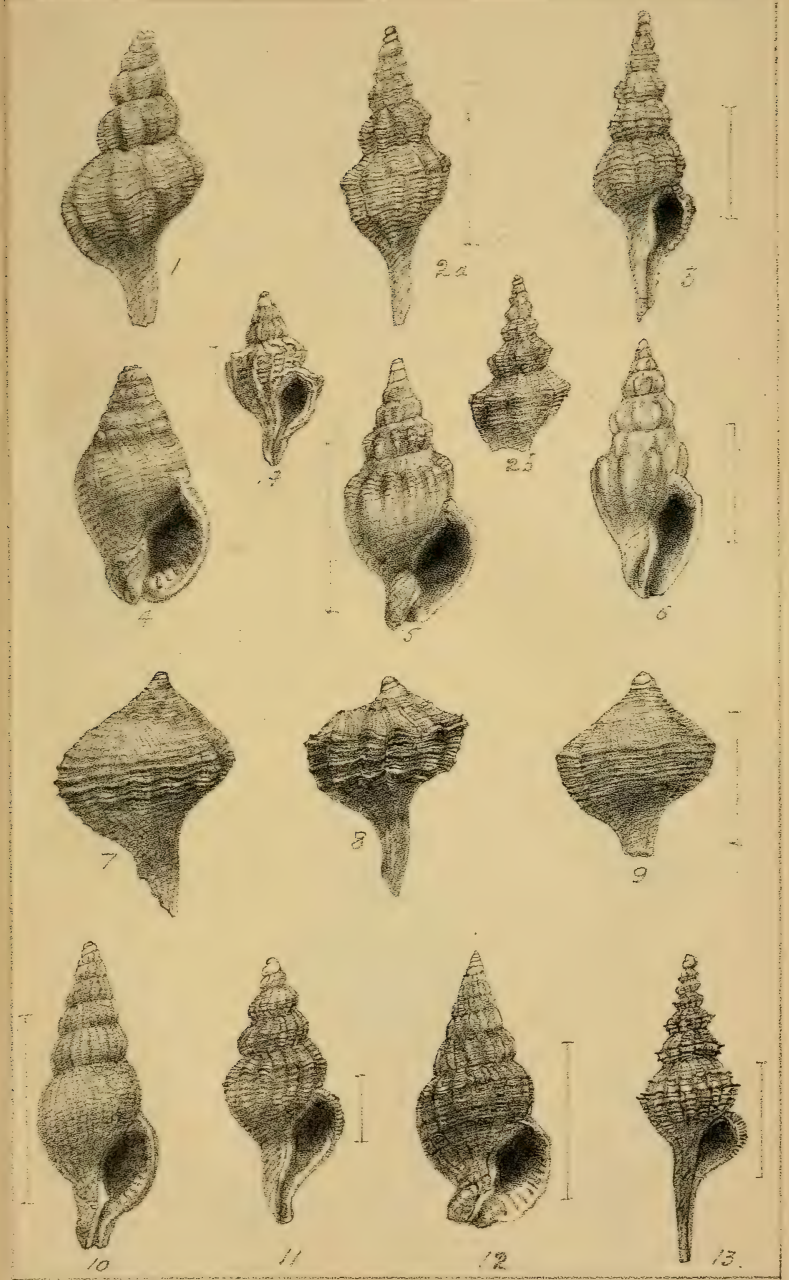

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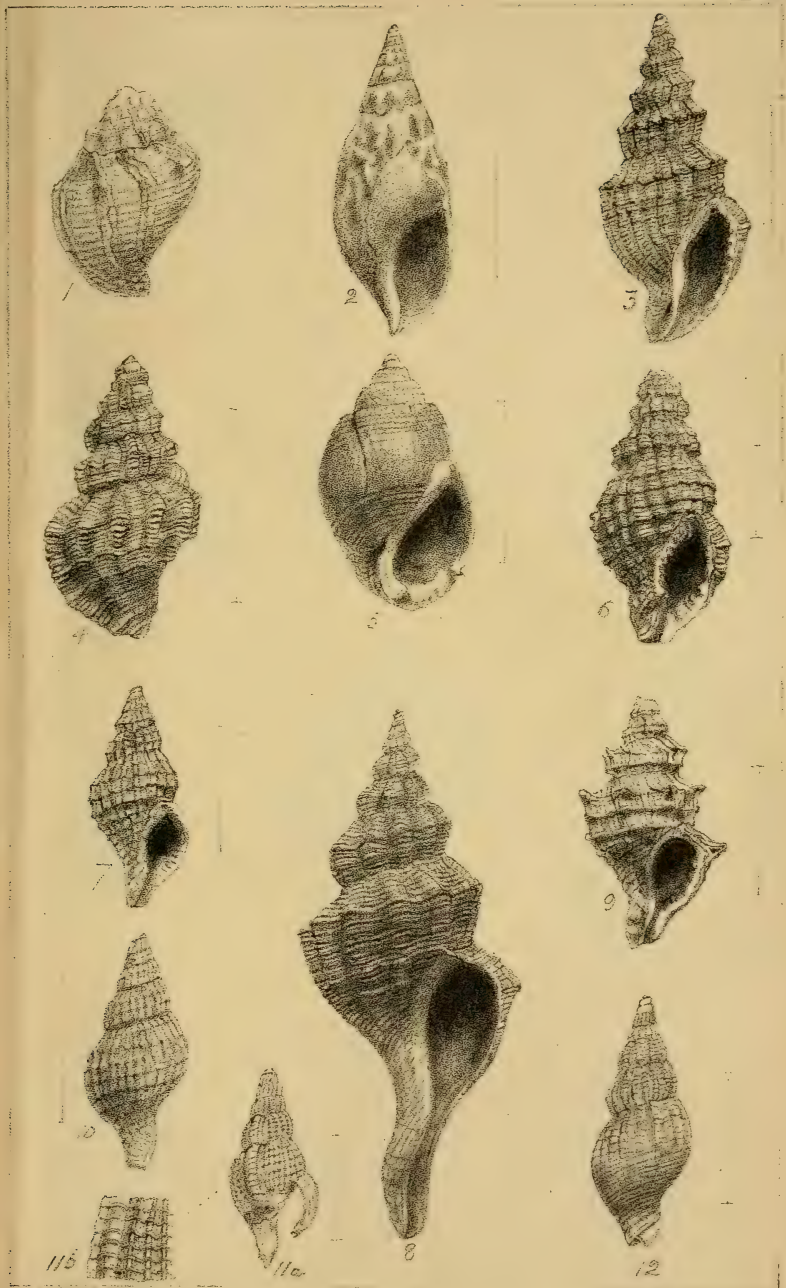
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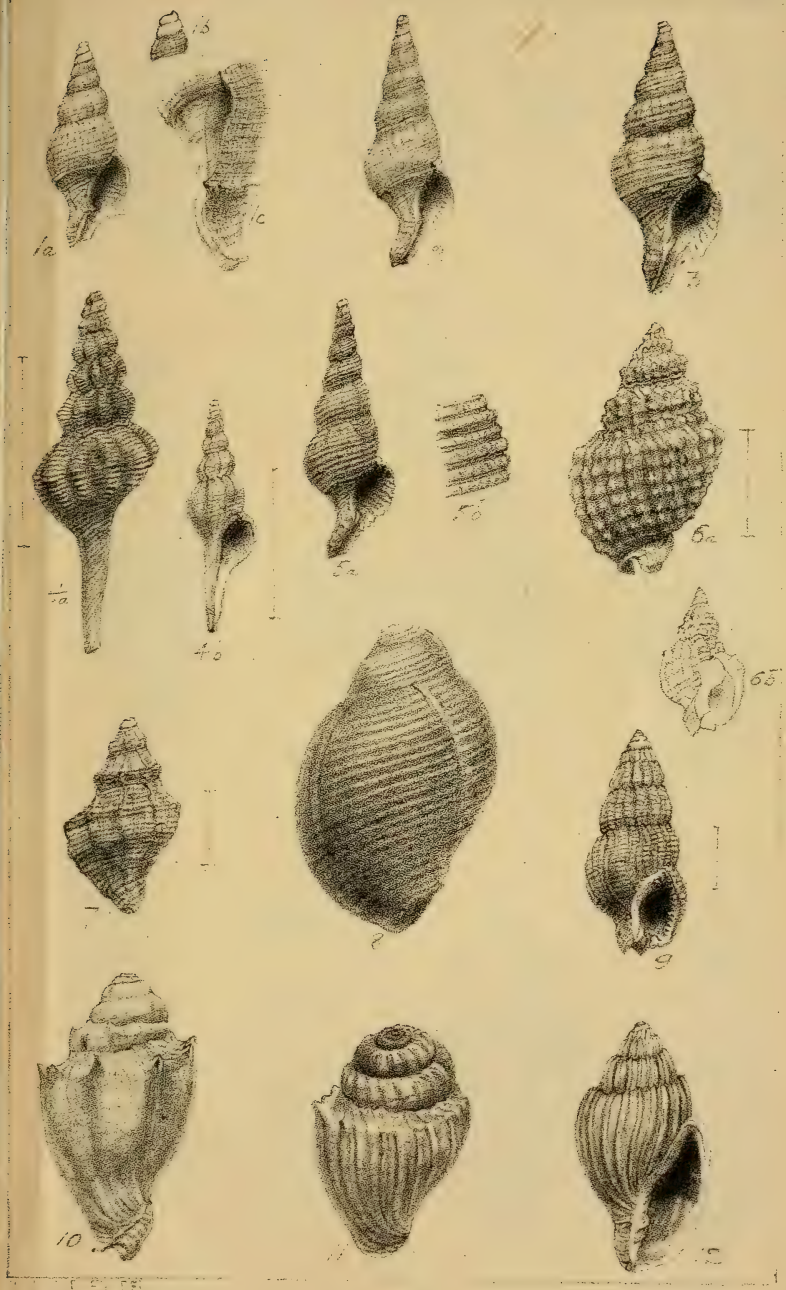
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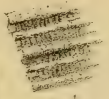

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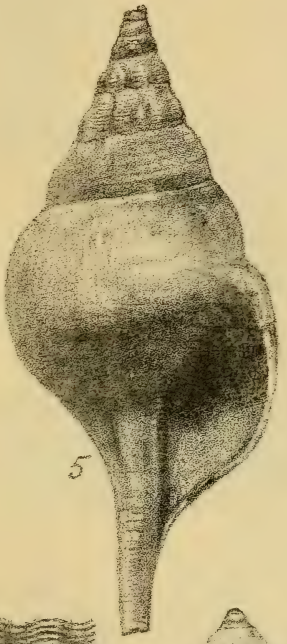

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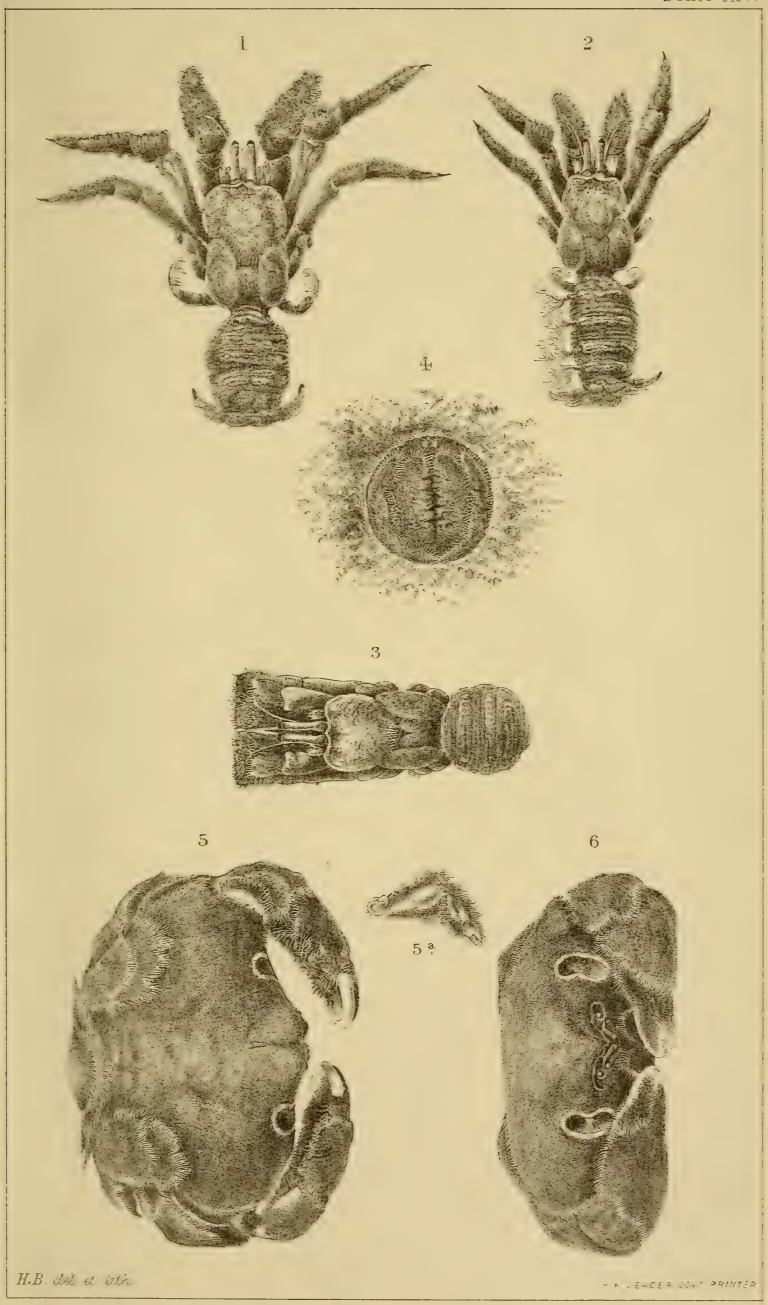

H.B. del. et lith.

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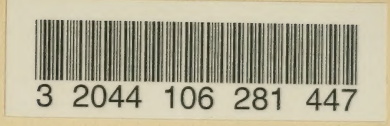
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Date Due

FEB 6 '67